POLISH ACADEMY OF SCIENCES
MEDICAL RESEARCH CENTRE

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RESEARCH REPORT

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MECHANISMS AND RESPIRATORY EFFECTS OF SIGNAL TRANSDUCTION IN THE CHEMOSENSITIVE STRUCTURES

(Assoc. Professor Mieczysław Pokorski)

We have studied the mechanisms of dopamine transport and release in the cat carotid body, using a continuous superfusion technique in vitro. A hypothesis was tested that apart from the known exocytotic vesicular dopamine release, a nonvesicular transport carried-mediated efflux of dopamine could contribute to its release upon stimulation. The evidence was found for an exchange/diffusion system, in which the movement of externally present dopamine into a cell stimulates the release of preloaded [^{3}H]dopamine from that cell. This homoexchange of dopamine was found to be independent of the extracellular Ca^{2+} concentration and dependent on the Na^+ gradient, which is consistent with its nonvesicular mechanism. These results suggest the existence of a Na-dependent carried-mediated efflux of dopamine, originating from a nonvesicular pool, which is a new finding with respect to the carotid body. Interaction of released dopamine with its membrane receptor may, through G-proteins, activate phospholipase C which cleaves phosphoinositides leading to the formation of second messengers which initiate cellular responses.

The hypothesis was tested that the peripheral chemoreceptor stimuli to breathing could also affect the laryngeal receptors. It was found that almitrine given into the laryngeal artery does not increase the activity of laryngeal afferents. This activity is enhanced only during the augmented breaths induced by almitrine.

Mechanisms of inhibitory, in certain conditions, effects of chemical stimuli to breathing were studied in the guinea pig. The hypothesis was verified that the reversed respiratory responses are due to the level of anesthesia and that anesthesia acts through depression of synaptic transmission. The results supported both hypotheses. A stepwise deepenning of anesthesia evoked a depression of breathing in response to stimulants. This effect was abolished or reversed by the blockade of GABA inhibitory transmission.

STUDIES ON THE ANATOMICAL AND FUNCTIONAL CONNECTIONS OF THE BRAIN STEM STRUCTURES AND CEREBRAL CORTEX WITH RESPIRATORY MOTONEURONES

(Assoc. Professor Krystyna Budzińska)

In the studies concerning neural pathways from supramedullary structures to phrenic motoneurones we have checked the hypothesis comming from the results of the previous work that the motor nucleus of the Vth nerve (n.V.mt.) may be the substrate for the pneumotaxic center that is involved in the regulation of inspiratory and expiratory timing. The comparison of the effects of electric stimulation of n.V.mt., structures within and outside of the pneumotaxic region have shown that excitation of n.V.mt. activates mechanisms of inspiratory off-switch. Short-latency phenomena as well as characteristics of phasic response in the phrenic nerve activity combined with time course of off-switch excitability during subsequent phases of inspiration correspond very closely to the inspiratory inhibitory part of pneumotaxic mechanism. Stimulation of pneumotaxic complex in the site of nucleus parabrachialis medialis evokes different effects that are adequated to activation of inspiratory facilitatory mechanism. The results support a hypothesis of importance of the motor nucleus of trigeminal nerve in the respiratory phase-switching.

Bulbar post-inspiratory neurons inhibit practically all subpopulations of bulbar inspiratory and expiratory neurons and play major role in switching inspiration to expiration. On the base of this findings it was hypothetised that also phrenic motoneurons are inhibited or dysfacilitated due to activation of post-inspiratory neurons. It was found that phrenic motor nucleus have been inhibited (dysfacilitated) in the time periods closely resembling the discharges of post-inspiratory neurons. The inhibition have been transmitted via bulbo-spinal pathways crossed at the C4-C6 level.

The multichannel analog biomedical data acquisition system (named JU-LADC) has been completed. The purposes of the system are: 1. analog data collection, 2. storing collected data in a large computer mass storage, 3. presentation of recorded data in an analog - graphical form on the computer screen during the data acquisition (on-line) and from the mass storage (off-line) and 4. retriving of signal measures (parameters) from selected regions of the data. The system integrates three basic functions: data presentation (oscilloscope like system), data collection (tape recorder) and the ability of data processing (computer system). The data processing consist of: data segmentation, retriving the parameters of the data segments in the form of a parameter vector that describes an individual data segment, grouping the data parameters in a form of a data-base to be analized by means of any statistical tool. This system was applied in the described above neurophysiological studies.

NEW METHODS TO PREVENT THE DEVELOPMENT OF "DELAYED VASOSPASM" SYNDROME AND NEUROLOGICAL DEFICITS FOLLOWING SUBARACHNOID HEMORRHAGE

(Assoc. Professor Paweł Grieb)

Immunosuppressive properties of 2-chloro-2'-deoxyadenosine (2-CdA) have been evaluated in a series of in vitro tests. The drug has been found to suppress the activation of T-lymphocytes, but its primary target seems to be the B-cell system. Low (nanomolar) concentrations of 2-CdA effectively prevent B-lymphocyte activation and IgG synthesis. It has also been shown that the drug prolongs the mouse skin to allograft survival. The data collected so far on 2-CdA seem to indicate that it is a very promising agent for further evaluation in clinical immu nosuppression and transplantology, including xenografting.

In patients with subarachnoid hemorrhage from ruptured intracranial aneurysm the response of T lymphocytes was found to be depressed. Considering this and several previous observations, a hypothesis of autoimmune etiology of intracranial aneurysms was put forward.

In the rabbit model of subarachnoid hemorrhage 2-CdA has been shown to prevent the development of angiopathy of intracranial arteries.

Low doses of 2-CdA have then been used in a group of patients with subarachnoid hemorrhage from ruptured intracranial aneurysm, who underwent early surgery (within 72 h from the bleeding spisode). The treatment resulted in apparent full protection against development of the "delayed vasospasm" syndrome and/or neurological deficits in these patients, with no side effects.

THE ASSESSMENT OF CYTOTOXICITY OF 2-CdA (2-CHLORO-2'-DEOXYADENOSINE) AND 2-BdA (2-BROMO-2'-DEOXYADENOSINE) TOWARDS ORGANOTYPIC CULTURES OF CHOSEN STRUCTURES OF THE CENTRAL NERVOUS SYSTEM AND GLIAL TUMORS

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Phosphorylation of 2-CdA by homogenates of human glial tumor tissues has been assayed. Glial tumors were cultured in vitro for assessment of the influence of the drugs on cell cycle kinetics with the use of DNA flow cytometry.

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EXCITATORY AMINO ACID RECEPTOR - DEPENDENT CALCIUM FLUXES IN THE HIPPOCAMPUS

(Professor Jerzy W. Łazarewicz)

The aim of these studies was to identify and to reveal the involvement of different natural calcium ionophores in injurious decompartmentation of Ca^{2+} to hippocampal neurons. Studies were focused on the role of ionic channels coupled to excitatory amino acid (EAA) receptors and of the L subtype of voltage-sensitive calcium channels (VSCCs). Microdialysis of the rabbit hippocampus in vivo was used to estimate the activity of calcium ionophores involved in Ca^{2+} fluxes after pharmacological stimulation and/or application of selective inhibitors. Changes in extracellular calcium concentration ($Ca^{2+}e$) were measured with an indirect method based on detection of $^{45}Ca^{2+}$ radioactivity in dialysate, [^{14}C] sucrose being used as a marker of changes in extracellular space volume in the hippocampus. It was shown that application of KCl to the hippocampus induces a decrease of $Ca^{2+}e$ (by 25% at 65 mM KCl). This effect is the resultant of several mechanisms. The decrease in Ca^{2+} results in 70% from activation of NMDA receptors by endogenous EAA which are released due to KCl depolarization, whereas the activity of L channels participate in this effect in approx. 25%. Maximal activation of the L channels with Bay K 8644 increased this value to 30%. Moreover, it was found that the decrease in Ca^{2+} e is partially compensated by paradoxical increase of $Ca^{2+}e$, resulting from KCl-induced cellular swelling and shrinkage of the extracellular compartment in the hippocampus. Local NMDA application to the hippocampus leads to a large (60% at 5 mM NMDA) decrease of $Ca^{2+}e$. Pharmacological characteristics indicate that this effect is primarily mediated by NMDA receptors. The effect of NMDA is only slightly (by 30%) inhibited by nimodipine and amiloride derivatives, indicating a relatively small indirect stimulation of the channels and Na^+/Ca^{2+} exchangers. Changes in extracellular space volume of the hippocampus after NMDA application were brief and negligible. Local application of kainate, the other agonist of EAA receptors, results in the decrease of $Ca^{2+}e$ in the hippocampus. This effect is inhibited by DNQX, an antagonist of non-NMDA receptors. It was shown that kainate-induced Ca^{2+} fluxes result from indirect activation of several mechanisms including nimodipine-sensitivite L channels and Na^+/Ca^{2+} exchangers, without significant participation of NMDA receptors. Only a small portion of kainate-induced Ca^{2+} influx to neurons may be attributed to a calcium-permeable subclass of kainate channels. Altogether, these data indicate that Ca^{2+} fluxes in

the rabbit hippocampus in vivo through maximally stimulated NMDA channels considerably exceed Ca^{2+} fluxes through the L subtype of VSCCs. Therefore, these results point to NMDA receptors as primary targets to therapeutic intervention aimed to protect hippocampal neurons submitted to excessive stimulation.

ROLE OF NMDA RECEPTORS IN MECHANISM OF ARACHIDONIC ACID RELEASE IN BRAIN

Supported by the State Committee for Scientific Research: grant # 403209101 (Professor Jerzy W. Łazarewicz)

Studies aiming to estimate a role of NMDA receptors in the ischemia-evoked arachidonic acid (AA) release in brain were performed in Mongolian gerbils submitted to 5 min bilateral ligation of common carotid arteries, following by 5 min recirculation in normothermic conditions. Ischemia-evoked AA release was evaluated by measurement of the brain content of AA metabolites: prostaglandins (PG) D2 and F1α and thromboxane B2. The experiments confirmed occurrence of prostanoid accumulation in the postischemic brain. Accumulation of PG D2 was significantly (by 35%) inhibited in animals treated with noncompetitive NMDA receptor antagonist MK-801 (0.8 mg/kg i.p., 30 min before ischemia), whereas a decrease of other prostanoids was not statistically significant. It was shown in parallel experiments that pretreatment of animals with MK-801 significantly protects CA1 neurons from delayed selective injury only in animals that developed a prolonged postischemic hypothermia. These data indicate that NMDA receptors do participate in the ischemia-evoked AA release in the brain. However, there is no correlation between this effect and selective neuronal injury after ischemia.

MECHANISM OF ARACHIDONIC ACID RELEASE AND ITS ROLE IN MODIFICATION OF TRANSDUCTION PATHWAY IN ADULT AND AGED BRAIN

(Professor Joanna Strosznajder)

In our studies on the mechanism of arachidonic acid release the main attention was concentrated on cross-talk between different receptor systems and postreceptor processes of transduction pathway.

Recently we have investigated the relationships between serotonergic and cholinergic receptor system for arachidonic acid release in adult and aged brain. For comparison this receptor relationships were studied for inositol phospholipid degradation. The second aim of our studies was to determine the role of arachidonic acid in signal transmission in the brain. In this case the significance of arachidonic acid in the GABAA receptor function was investigated.

It was found that serotonin inhibits cholinergic receptor dependent arachidonic acid release by phospholipase A2 action. This negative coupling between these two receptors system was observed in adult brain. Our studies indicate that activation of acylation reaction coupled to serotonergic 5HT1a receptor is involved in the mechanism of this negative coupling. It was found that this type of receptor relationship does not occur in the aged brain, because aging specifically eliminates the cholinergic receptor dependent arachidonic acid release and serotonergic receptor activated arachidonic acid incorporation.

Moreover, we have also observed that serotonin abolishes cholinergic receptor-dependent inositol phosphate liberation in aged brain. Serotonin and carbachol-agonist of the cholinergic system stimulate more actively degradation of phosphoinositides in aged brain comparing to adult brain. It is possible that serotonin 5HT2 receptor dependent arachidonic acid and diacylglycerol release known to be involved in PKC activation may be responsible for this negative coupling between both receptors for inositol phosphate formations.

Arachidonic acid, liberated during receptor stimulation, may act as a second messenger in signal transduction pathway and also as a neuromodulator. In our studies we have observed that arachidonic acid, in the concentration dependent manner, enhances agonist binding into GABAA receptor of synaptoplasmic membranes. Concomitantly arachidonic acid decreases the binding of antagonist ^{35}S-t-butylbicyclophosphorothionate (^{35}TBPS) into convulsant site of GABAA receptor chloride channel. Analysis of binding kinetics of this antagonist was used for the evaluation of chloride channel function. In adult brain arachidonic acid enhances affinity of the agonist to synaptic plasma membrane receptor (the value of KD is decreased by AA) for high and low affinity. In the synaptic plasma membrane from aged brain arachidonic acid increases low affinity agonist binding into GABAA receptor, however decreases high affinity muscimol binding into receptor. Arachidonic acid significantly suppresses affinity and the amount of binding sites for TBPS. Moreover, this fatty acid decreases (by about 35%) GABA dependent Cl uptake into synaptoneurosomes from adult and aged brain. Ageing itself affects agonist and antagonist binding into receptor, and remains without effect on GABAA dependent Cl uptake into synaptoneurosomes. However, an analysis of TBPS kinetic binding parameters indicates that ageing modifies chloride channel function.

The results of our studies have shown that arachidonic acid may be a very important endogenous regulator of the neurotransmission processes in GABAergic receptor system.

In pathological condition, as for example in brain ischemia, arachidonic acid

may be responsible for disturbances of GABAA receptor function.

We have investigated also the action of GABA metabolite gammabutyrolactone (GBL) on arachidonic acid release and phosphoinositide metabolism in normoxic and ischemic brain. Gammabutyrolactone was applicated intraperitoneally in a dose of 300 mg per kg b.w. 10 min before sham operation and global ischemia in gerbils. It was observed that GBL stimulates phosphoinositide degradation and arachidonic acid release in normoxic brain. However, in the brain submitted to ischemia it enhances the survival time for ischemic insult and decreases the accumulation of lipid derived second messenger formation as arachidonic acid, diacylglicerol and inositolphosphates. Additionally, GBL enhances the phosphoinositides kinase activity, particularly phosphophosphatidylinositol kinase. In this way GBL protects the brain against depletion of bisphosphophosphatidylinositol, which may play an important role in the dynamics of cytoskeleton in the neuron cells. Moreover, GBL enhances the resistance of synaptosomal and subsynaptosomal membrane for lipolitic activity stimulated by ischemic insult and occurring after ischemia.

THE METABOLIC AND STRUCTURAL CHANGES IN ISOLATED NERVE ENDINGS CAUSED BY TOXICITY OF LEAD

(Assoc. Professor Urszula Rafałowska)

The effect of lead on the uptake of GABA, dopamine, histamine and histidine was studied in the presence of different concentrations of calcium in synaptosomes obtained from chronically lead-treated rats and in synaptosomes with in vitro added lead.

Lead decreased the uptake of GABA, increased the uptake of dopamine and did not change the uptake of histamine and histidine. These effects were independent of calcium concentration.

Lead administration to rats changed the morphology of the synaptosomes which was manifested in a decreased number of synaptic vesicles and disturbed mitochondrial structure. Also the Na^+/K^+ -ATPase activity was diminished. These results suggest existing of several different mechanisms of lead toxicity on uptake, related to individual neurotransmitters, which are not necessarily connected with Pb^{2+}/Ca^{2+} interaction.

Also, the effects of lead on morphology of capillaries and on activity of γ-glutamyltranspeptidase were examined. The opening of light junctions between endothelial cells and disturbances in γ-GTP activity can be responsible for dysfunction in the capillary permeability.

MODIFICATIONS OF SIGNAL TRANSDUCTION AND GENE EXPRESSION IN CNS PATHOLOGY SUCH AS ISCHEMIA OR HYPOMYELINATION

(Assoc. Professor Krystyna Domańska-Janik)

The studies on the involvement of protein kinase C (PKC) in various cellular systems transducing ischemia-evoked signals were continued. The secondary effect of the postischemic, short-lasting PKC translocation/activation tested in vitro and in vivo, consisted of:

- an activation of cAMP signaling;
- a transient activation of early-response protein - ornithine decarboxylase.

As it was previously reported, the postischemic increase of the ability of brain tissue to accumulate cAMP could involve a reversible impairment of the inhibitory A1-adenosine signal as a result of PKC-dependent phosphorylation. In the present investigation we examined additionally the effect of fatty acids (FA) and some other ischemia-induced bioactive lipids on A1-adenosine receptor (A1-AR). The specific ligand binding to A1-AR was competitively and reversibly inhibited by unsaturated FA. The effective FA concentrations were in mmolar ranges with the potency as following: oleic<arachidonic<decosaenoic<linoleic <linolenic acids.

Further characterization of the dysmyelinating mutant pt rabbit was focused on the myelin protein expression in the 1 to 120 day-old animals. The analyses were performed in total brain homogenates and purified myelin by radioimmunoassay, PAGE and immunoblotting. The proteolipid protein (PLP) was most drastically reduced, whereas the level of other proteins corresponded to the degree of hypomyelination. In the study on 4 week-old rabbits the myelin specific RNA-s were analysed by the Northern-blot technique. The PLP mRNA was of normal size in the pt rabbits but its level was reduced to a greater extent than messages for the other myelin proteins.

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DAMAGE OF THE VASCULAR BED AND THE VASCULAR-TISSUE JUNCTION AND THEIR SIGNIFICANCE IN PATHOGENESIS OF STRUCTURAL AND METABOLIC ABNORMALITIES IN CEREBRAL ISCHEMIC SYNDROMES

(Professor Mirosław J. Mossakowski)

The studies were conducted with use of two experimental models of CNS ischemia: global cerebral ischemia after cardiac arrest in rats, and short-lasting forebrain ischemia in Mongolian gerbils, caused by bilateral ligation of the common carotid arteries.

In the first model the condition of the blood-brain barrier (BBB) was evaluated in the early postischemic period - after 3.5-, 5- and 10-min of cardiac arrest. The disseminated alterations of the BBB were shown in the cerebral cortex, subcortical structures, brain stem and cerebellum. Changes of BBB permeability involved capillaries and arterioles as well as venules surrounded by perivascular space. The preferent sites of the BBB damage were bifurcations of venules. Changes of vascular permeability were connected with tight junction opening, creation of vesiculo-canalicular structures, increased micropinocytotic activity of endothelium, as well as disintegration of endothelium. Comparable to other types of ischemia biphasic character of the barrier mechanism damage was observed. In the same conditions formation of microthrombi and thrombocytic aggregates after global cerebral ischemia was characterized. Thrombocytic aggregates of different dimentions in cerebral arteries and veins have been found from several minutes to several months after the incident of ischemia. The predilective sites of thrombocytic aggregates were in the same microcirculation regions where the BBB damage was observed. The passage of thrombocytes outside the vascular bed to the brain tissue was a noteworthy phenomenon. Prolonged formation of the intravascular thrombocytic aggregates indicates persistent impairment of the thrombocytic-endothelium interaction as a result of ischemia, and may play an important role in pathogenesis of postischemic encephalopathy.

Changes of leukotriene C4 (LTC4) concentration in the rat brain cortex and hippocampus and brain water content have been evaluated during 5-min clinical death and up to 2hrs after resuscitation. A significant increase of LTC4 concentration was observed in the early postischemic period, which normalized 2 hrs after resuscitation. Water content did not show any significant changes. The results question the hypothesis that LTC4 plays an important role in pathogenesis of cerebral edema.

Studies performed on short-term forebrain ischemia in Mongolian gerbils concentrated on electron microscopic characteristics of two neurotransmitters: gamma-aminobutyric acid (GABA) and glutamate distribution in structural elements of CA1 sector of hippocampus. Occurence of GABA was combined with symmetrical synapses located on perikarya of pyramidal neurons, while glutamate appeared mainly in asymmetrical synapses located on dendrite ramifications of these cells. Ischemia in the early period produced a decrease of GABA content and a slight increase of glutamate content in synapses of hippocampus. Later on, the immunohistochemical picture of synapses normalized. The redistribution of glutamate from neuronal elements to the astrocytic glia might indicate participation of glia in metabolism of this neurotransmitter.

In the same experimental model Concavalin A (Con A), binding to neurons of CA1 sector of Ammon's horn, was characterized during the evolution of their postischemic injury. Reduction of Con A binding to pyramidal cells was progressing proportionally to the degree of neuronal injury in the CA1 sector, however, the above changes concerned also the nerve cells without histological damage. It is suggested that this phenomenon might represent only an inhibition of carbohydrate metabolism with subthreshold cell damage.

Investigations in vitro on the organotypic culture of the rat hippocampus undergoing hypoxia or exposure to excitotoxic agents showed specific lamellar structures in neurons and seldom in glial cells. These cytoplasmic structures might represent alterations in the activated granular endoplasmic reticulum as a result of hypoxia or an excitotoxic effect of kainic or quinolinic acid. Some of the lamellar structures are comprable to alterations observed in the early phases of postischemic delayed neuronal death.

THE MORPHOLOGICAL MANIFESTATION OF AGING DEPENDING ON CEREBRAL STRUCTURES AND PARTICIPATION OF SELECTED EXOGENOUS CHEMICAL AGENTS IN DEVELOPMENT OF DEGENERATIVE PROCESSES

(Assoc. Professor Irmina B. Zelman)

The investigations were focused on immunocytochemical and ultrastructural characterization of amyloid plaque in transmissible (Creutzfeldt-Jakob disease - CJD and Gerstmann-Straussler-Scheinker syndrome) and non transmissible amyloidoses (Alzheimer disease - AD). Comparative studies have shown that besides immunohistochemically "clean cases" with typical amyloid deposits (PrP or beta-A4) in the group of PrP-amyloidoses, cases with additional presence of beta-A4 deposits, and cases with replacement of PrP with beta-A4 amyloid plaque occurred. This is comparable to AD, however, in contrary to plaques in this pathological process, they do not have immunoreactivity of tau and ubiquitin. At present the interpretation of this phenomenon can be only hypothetical.

Participation of microglia in organization of PrP plaque in GSS was characterized in comparison with beta-A4 plaque in AD. The similar immunohistochemical and ultrastructural picture of microglial cells in both types of amyloid plaques suggests that basic differences between them are related rather to the molecular structure of amyloid proteins than to the mechanism of development of amyloid plaque per se. The direct contact of amyloid fibrils with endoplasmic reticulum of microglial cells indicates their participation in amyloidogenesis rather than of fagocytic function.

In the breakdown and organization of ischemic infarction in senile brains with Alzheimer type pathology, beta-A4 amyloid is scavenged and retained long in microglia/macrophages and astrocytic cells. Immunoreactivity of neurofibrillary degeneration markers was not found, probably because of very quick degeneration of this abnormal cytoskeleton elements.

In a case of progressive supranuclear palsy, besides characteristic and typical alterations for this syndrome, beta-A4 amyloid plaques have been additionally found in cerebral cortex, however, in different localization than in AD. Dementia of subcortical type was intensified by coexisting extensive lacunar state and degenerative changes of nerve fibers in the white matter.

It was shown that the ground of profound dementia in Parkinson's disease might be coexisting with degenerative changes of Alzheimer type. The latter could be so extensive that diagnosis of both pathological syndromes would be justified.

Quantitative evaluation of GFAP-positive astrocytes in aged normal rabbits and pt mutants with CNS hypomyelination did not show essential differences between two groups of animals. In brains of senile aminals the results were comparable with remarkable accumulation of glial fibrils in cytoplasm and astrocytic processes. In opposite to the period of myelination, in which astrocytic gliosis is transitory in nature, progressing accumulation of glial fibrils leading to alterations of cellular structure, might represent the senile changes of astroglial population. Acceleration and intensification of this process in brains of mutants suggest that biochemical changes in the mielin membranes could be important factors in development of involutive gliosis in the white matter.

In investigations on the effects of exogenic chemical agents on central nervous system, the late effects of quinolinic acid injected into the rat hippocampus resulted in local degeneration of piramidal neurons and postsynaptic dendrites. Glutamate released from degenerated neurons is probably responsible for changes in astrocytic processes, which differ from chronic pathological alterations with phagocitic activity.

In experimental model of tellurium intoxication in mature and developing rats, the reversible changes in the white matter were found. They manifested in the form of loss of myelin staining and inhibition of myelination. These changes were dependend on the injected dose of the toxic substance and were not related to impairment of the liver and kidney function. The latter was confirmed by biochemical and histological studies.

PROGRESSIVE HIPPOCAMPAL ATROPHY AND ADVANCEMENT OF DEMENTIA IN POPULATION OVER 65 YEARS. NEUROLOGICAL, RADIOLOGICAL AND NEUROPSYCHOLOGICAL EXAMINATIONS

(Professor Mirosław J. Mossakowski)

The research had two objectives: establishing a comprehensive protocol for the diagnosis of the Alzheimer's disease (AD) and defining patterns and norms for computer tomography assessment of hippoampal atrophy.

The studied group consisted of patients of Outpatient Clinic for Alzheimer's subjects and residents of a nursing home for elderly.

Clinical examination (both neurological and neuropsychological), laboratory findings and neurophysiological diagnosis allowed to eliminate subjects with multiinfarct dementia (MID) from the study. Cases of dementia related to cobolamine and folate acid deficiency were to be singled out through laboratory findings. However, such dementia was noted in neither elderly subjects, nor MID subjects, nor suspected AD cases. In the 8% of AD patients in whom a decreased cobolamine level was noted, the dementia proved not to be deficiency dependent.

Under neuropsychological examination verbal memory showed no statistically significant differences in normal elderly subjects and patients with degenerative brain diseases (Parkinson's) while it appeared markedly impaired in cases of suspected Alyheimer's disease.

Neuroradiological examination was next performed on patients with suspected Alyheimer's disease. The relation between the degree of selective hippocampus atrophy and the degree of dementia was established as a high statistical probability ($p<0.001$).

METABOLIC AND STRUCTURAL CHANGES IN THE CNS FOLLOWING INTOXICATION WITH INORGANIC MERCURY

(Professor Jan Albrecht)

Previous studies revealed that a single i.p. administration of a moderate dose of mercuric chloride (MC) durably inhibits the rat cerebral microvascular Na/K ATPase. To compare the mechanism of this inhibition to that produced by incubated isolated cerebral microvessels with MC in vitro, the effects of both treatments were compared with regard to a) K^+-activation kinetics of the enzyme; and b) ouabain binding, reflecting the number of active enzyme molecules. Both treatments produced a 40% decrease of the Vmax value for the enzyme and a 60% decrease of ouabain binding. The similarities of the effects in vivo and in vitro suggest that the inhibition of the cerebromicrovascular Na/K ATPase follo-

wing in vivo administration of MC results from the direct interaction of mercuric ions with the enzyme. A histochemical analysis revealed the enzyme inhibition by in vivo treatment to involve cerebral microvessels of all the cortical layers. Electron microscopy confirmed the enzyme reaction to be very weak or completely absent in both the luminal and abluminal endothelial cell membranes, and the luminal plasmalemma showed invaginations and pinocytic vesicles indicative of changes in its transport functions. The enzyme inhibition coincided with profound perivascular swelling involving mainly the astrocytic enfeet.

A study performed on a primary culture of the rat cerebral astrocytes confirmed the inhibition by MC of the astrocytic uptake of the excitotoxic neurotransmitter glutamate - an event postulated to contribute to MC neurotoxicity. An analysis of the ability of membrane-penetrating and -nonpenetrating SH-protecting agents to prevent the inhibition allowed to ascribe the inhibitory effect to the interaction of MC with vulnerable SH groups located within, but not on the surface of the cell membrane. An ultrastructural study carried out on organotypic rat cerebellum directly confirmed the hypothesis that low, nontoxic doses of MC lower the threshold for neurotoxicity of exogenously added GLU.

EFFECTS OF AMMONIA ON THE GLIAL TRANSPORT AND METABOLISM OF NEUROTRANSMITTERS AND THEIR PRECURSORS

(Professor Jan Albrecht)

The studies have concentrated on the excitatory, glutamatergic system. Attention was payed to the differences between the responses of various enzymes related to this system in the synaptic and nonsynaptic, mostly astroglia-derived mitochondria. Hyperammonemia in vivo selectively stimulated the synaptic mitochondrial activity of α-ketoglutarate decarboxylase - a catalytic component of the α-ketoglutarate dehydrogenase complex involved in glutamate outflow to the Krebs cycle. Hyperammonemia in vivo also stimulated the glutamate dehydrogenase activity specifically in the direction of glutamate oxidation. The results taken together are indicative of an increased flow of glutamate through the tricarboxylic acid cycle. This may be considered to reflect an adaptation of the nerve endings to the energy deficit accompanying hyperammonemia. However, this adaptation may adversly affect glutamatergic neurotransmission.

Hyperammonemia was found to alter the sedimentation properties of both mitochondrial classes, as manifested by their increased contamination with a cytoplasmic marker enzyme - lactate dehydrogenase and, in the case of nonsynaptic mitochondria, by an increased activity of a membrane marker - acetylocholinesterase. Hyperammonemia in two models was also found to induce cerebral edema which correlated with the decrease of the cerebral glutamate content.

This result was interpreted to indicate participation of glutamate in osmoregulation (regulatory volume decrease).

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NEUROPATHOLOGICAL AND MORPHOMETRIC ANALYSIS OF CHANGES OCCURRING IN THE CNS DURING MATURATION

(Professor Maria Dąmbska)

The morphometric evaluation of neurons in hippocampal region was performed on four control and eight pathologic cases. The results obtained demonstrated differences in the degree of lesions after acute, severe and prolonged asphyxia in newborns.

The neuropathologic evaluation of autopsy material confirmed the relations between the time of damage and developmental age of examined brains. It was particularly evident in cases of newborns with cardiac failures and secondary cerebral infarcts.

A case of congenital cerebro-oculo-dermal malformations was described presenting presumably a new syndrome. The migration abnormalities in periventricular and subarachnoidal regions found in this case are of very rare type.

ULTRASTRUCTURAL AND IMMUNOHISTOCHEMICAL STUDIES OF THE NERVOUS SYSTEM IN HUMAN SUBJECTS WITH PRENATAL PATHOLOGY AND IN ANIMALS TREATED WITH NEUROTOXIC DRUGS

(Assoc. Professor Danuta Maślińska)

Studies performed in human beings revealed that in patients with Down's syndrome, accelerating process of aging, is connected with defective formation of transcription factor AP-1.

The response of neurons in human myenteric plexus to the harmful agents causing accumulation of amyloid beta protein was the same as that of neurons in the brain.

In peripheral and brain amyloidoses the pathomechanism of myenteric plexus degeneration was different.

In rabbits with vincristine neurotoxic side-effects the biphasic reaction of brain vessels was observed. The initial vasoconstriction was followed by the intensive pinocytotic process in wall of brain capallaries. Numerous celles of brain parenchyma underwent apoptosis.

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INVESTIGATION OF THE REPARATIVE REACTION IN SELECTED CEREBRAL STRUCTURES (HYPOTHALAMUS, MEDULLA, CORTICAL STRUCTURES) FOLLOWING AN ISCHEMIC INCIDENT - THE ROLE OF BRAIN MACROPHAGES

(Professor Jerzy Borowicz)

The aim of the immunocytochemical study was to evaluate the functional and molecular aspects of synaptophysine (SY-38) in the hypothalamus-hypophysis system (UPP) and the hippocampus of both the control rats and in those following 5 min of complete ischemia. In the membranes of the Golgi apparatus system cisterns of the hypothalamic neurosecretory nuclei and in the microvesicle membranes of the hypophysis a high concentration of SY-38 was found. The presence of SY-38 was also revealed in the neurotubular membranes of the whole UPP of the animals examined. In the hippocampus the presence of synaptophysine was revealed in the synaptic vesicle membranes and on the neurotubules. Compared to the normal state, immunoreactivity increased after a 5 min ischemia. The results obtained after the ischemic incidents support the hypothesis that the immunoreactive microvesicles are, similarly to the synaptic vesicles, organelles committed to the specific neuronal transmission.

The influence of exogenous γ-butyrolactone (GBL) on the hypothalamus-hypophysis system (UPP) of a Mongol hamster undergoing a 10 min period of ischemia was investigated. The results obtained from the ultrastructural analysis did not confirm the protective influence of GBL; whereas they revealed slight disturbances of the neurosecretory process resulting from the damage of some cellular elements of the hypothalamus and hypophysis.

A study of the toxic influence of $HgCl_2$ on the brain cortex of rats was also carried out. Eighteen hours after the induction of $HgCl_2$ an accumulation of dense deposits in the edematic elements of the nerve and glial cells and a multiplication of macrophages were discovered. Observations made after 5 days revealed these processes to be reversible.

The investigations were carried out concerning the changes occurring in the rat brain within the late period (i.e. 6 to 12 months) after an incident of clinical death caused by 5-10 min of cardiac arrest. The area adjacent to the capillary vessels of the hypothalamic neurosecretive nuclei and of the temporal cortex

was analysed. The most important observation was the presence of single fibrils, and sometimes bundles, of collagen in the compartments between the endothelium and the pericytes, the pericytes and the basal membrane and also inside the perivascular phagocytes. It was concluded that in the material examined reparative processes occur in the area between the capillary vessels and the cerebral cells surrounding them. The investigations revealed the presence of fibrosis similar to that found in parenchymal organs. It is impossible to say, however, which of the investigated cells, in face of the lack of fibroblasts, responsible for the synthesis of collagen protein.

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BRAIN ELECTRICAL ACTIVITY MAPPING (BEAM) IN PRIMARY GENERALIZED EPILEPTIC SEIZURES SOMATOSENSORIC EVOKED POTENTIAL (SSEP) STUDY IN DIAGNOSIS OF THE LEVEL OF SPINAL CORD DAMAGE

(Professor Eugeniusz Mempel)

The computer analysis of paroxysmal and interparoxysmal generalized epileptic dischargers (the BEAM method) allowed to localise epileptic foci and to determine directions of the propagation of discharges in several cases. These discharges spread within one and both hemispheres, also spread into the cerebral midline structures. The frontal paramedial foci with discharges into the midline structures were mostly the cause of seizures characterized by unconsciousness. Other studies allowed to discover so called "the mirror-like foci" in homological areas of the contralateral hemisphere within cerebral frontal lobes. BEAM as a new noninvasive method allows to reveal epileptic localization in the cortex of the brain in primary generalized epileptic seizures more often, in spite of the opinion of their centrencephalic origin.

SSEP studies in the cervical discopathies showed conductivity reduction within peripheral part as well as in the part of C2-C6 spine. These studies have practical importance in diagnosis of damages in cervical part of vertebral column.

EARLY SYMPTOMS OF DISTURBANCES OF INTRACRANIAL VOLUME PRESSURE RELATIONS

(Assoc. Professor Zbigniew Czernicki)

One of the important problems studied in our Department was an early diagnosis of disturbances in the intracranial volume-pressure relations. In the experiments carried out on cats, the usefulness of harmonic alternations of ICP pulse wave in the estimation of intracranial volume reserve was evaluated. It was confirmed, that the ICP pulse wave analysis could inform earlier than other parameters about the intracranial system changes. So, it seems to be very informative in the intensive care of neurosurgical patients.

Studies with different rates of lumbar infusions allowed to elaborate the new model of infusion test. The test was checked under experimental conditions. It was proved, that application of three succeeding infusions (first - low rate - 0.06 ml per min, second - high rate - 0.3 ml per min, the third - again low rate - 0.06 ml per min) allowed to investigate the dynamics of CSF out-flow resistance changes depending on the intracranial pressure. The new method should be useful and important in clinical diagnosis of low-pressure hydrocephalus. The transcranial Doppler studies (TCD) showed the usefulness of the method in examination of focal brain vessel CO_2 reactivity. The measurements were done in patients after brain injures and the correlation of vessel reactivity disturbances with localisation of brain lesions in CT was found. The Acetazolamid application allowed to evaluate the cerebral vascular reserve. This is a reason why the obtained information is very important in taking decision on surgical treatment of cerebral circulation insufficiency.

The transcranial Doppler (TD) was found also to be a very useful method in mental activity investigations. The estimation of blood flow changes during neuropsychological studies (considering hemispheric asymmetry and brain atrophy) was elaborated. The method should be very useful e.g. in the clinical diagnosis of low-pressure hydrocephalus.

LEARNING ABILITY IN ELDERLY PERSONS

(Professor Jadwiga Szumska)

The studies showed that in the degenerative diseases (Alzheimer and Parkinson diseases) besides the general deterioration of cognitive processes the verbal memory is very much disturbed. This dysfunction is caused by the linguistic function disorders and/or memory disturbances. Therefore, in the present studies both - linguistic and memory functions were evaluated in processes of learning.

In the clinical experiment learning ability was studied using verbal and nonverbal material with succesive and simultative strategy applied. The study was carried out on 42 subjects, 20 young (control group) and 22 elderly persons. Statistical analysis confirmed the learning ability deterioration concerning both material types and both strategies. The most disturbances were observed in verbal-simultative learning procedure.

The obtained results suggest hemispheric interaction disorders as a cause of the disturbances observed. Significantly worse results obtained in the group of persons from Nursing Home in comparison with those in independently living persons could be due to the wrong organization of this institution or some nondiagnozed brain pathology.

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MORPHOLOGICAL AND ELECTROPHYSIOLOGICAL CHARACTERISTICS OF IMMATURE AND AGING MUSCLE

(Professor Anna Fidziańska)

In the last few years the most attention has been paid to neuromuscular diseases in which the concomitance of architectural myofibril abnormality and desmin filament storage occur. Desmin has a special significance for the maintenance of the regular structural organization of sarcomere-associated cytoskeleton. Disorganization or remodeling of the cytoskeleton, as observed in pathological reactions, may change muscle protein expression.

For this reason we started the study on the distribution of desmin in the muscle specimens taken from patients with congenital myopathies by using antibodies against the intermediate filaments - vimentin, desmin.

As a first report we have presented a slowly progressive myopathy with focal myofibrillar disorganization of targetoid or core-like nature. Aberrant accumulation of 8-10 μm filaments seen at the ultrastructural level as a main content of core-like structures corresponds to the presence of desmin positive inclusions in light microscopy. This may represent a new disease entity due to an unknown myofibrillar protein defect that produces abnormalities in the structure of the muscle contractile elements. Presented myopathy indicates also that core-like changes, contrary to structured core devoid of desmin found in the central core disease, are a different entity and require further morphological as well as biochemical investigations.

Age-related changes in neuro-muscular system have been recently extensively studied both in humans and experimental animals. It is well known that the muscle strength and muscle mass decline with age. The morphological changes described by several investigators in the senile muscle are consistent with those found in neurogenic atrophy. Indeed, a progressive loss of motor neurons and terminal axons seems to be the main characteristic of the aging muscle.

Recently, in a group of very old rats, we observed severe motor deficit with marked decrease of muscle force and mass accompanied by muscle stiffness.

In electromyographic examination spontaneous tonic activity was present in all examined muscles.

Diverse morphological changes found in muscle in light and electron microscopy correspond to chronic denervation atrophy. A number of the already

known abnormalities could be demonstrated. However, sarcoplasmic reticulum (SR) tubular formations, which have been observed so far, only after a long standing experimental denervation of the muscle, were seen for the first time in unlesioned rats. This fact could be explained by more advanced age of our experimental aminals and, in consequence, more advanced denervation atrophy. The other interesting finding, not yet observed in senile muscle, is the extensive splitting of muscle fibers with very well preserved morphology of splitted fragments.

Therefore, it seems that no single characteristic abnormality or set of morphological changes occur, which could identify markedly functionally altered senile muscle.

To our knowledge, in such very old rats no complex functional or ultrastructural analysis of the mechanism responsible for the impairment of neuromuscular function has been done so far.

ABNORMALITIES IN X-LINKED AND LIMB-GIRDLE DYSTROPHIES

(Professor Irena Hausmanowa-Petrusewicz)

About 15% of patients previously diagnosed as limb-girdle dystrophy after DNA testing and staining for dystrophin tourned out to be X-linked type of dystrophy (mostly Becker type).

Western blotting technique was applied to detect parvalbumin and S-100 protein in muscles from Duchenne's dystrophy patients and patients with other muscle diseases and 5 age-matched normals. Duchenne's dystrophy muscles were found to contain significantly decreased amounts of parvalbumin and S-100 protein. The parvalbumin level in Duchenne's dystrophy was not related to the age of patients and the stage of their disease. The S-100 protein was decreasing progressively with age of the patients. In advanced stage of dystrophy S-100 protein was present only in trace amounts. In other primary myopathies and neurogenic atrophy cases both parvalbumin, as well as S-100 protein levels were similar to those observed in healthy subjects.

The results suggest that a decrease in the content of parvalbumin and S-100 protein in dystrophic muscles may contribute to the elevation of Ca^{2+}, level in the sarcoplasm with subsequent activation of the Ca^{2+}-dependent proteolysis and ion transport disturbances.

The muscle biopsies performed in chronic progressive neuromyopathy, involving proximal as well as distal muscle, display a numerous unusual sarcoplasmic inclusions. These filamentous inclusions found in subsarcolemmal areas were closely related to Z-band. Immunocytochemical study, using polyclonal and monoclonal antibodies, revealed that the inclusions consisted of dystrophin positive material. Overproduction of dystrophin-related protein and/or dystrophin mutation is discussed.

MYASTHENIA - IMMUNOLOGICAL CHARACTERISTIC IN MYASTHENIA

(Assoc. Professor Barbara Badurska)

The question is how to treat myasthenia in elderly patients - the answer has been for a long time a matter of disagreement between clinicians, immunologists and surgeons.

The course of the disease and validity of treatment have been retrospectively reviewed in 82 patients with myasthenia gravis with the onset of first symptoms after 65 to 81 yrs of age.

Associated autoimmune diseases were found in 14% of patients: in 4% rheumatoid arthritis, in 3% diabetes mellitus, in 1% systemic lupus erythematodus and in 6% thyroid disease. Ocular signs alone at the beginning of disease were more common in older group. A significantly greater percentage of older patients progressed to severe disease with bulbar signs.

Forty patients were treated surgically and 60% of them received steroids both before and after operation.

In 45% of surgically treated patients thymoma was found (in 20% encapsulated and in 25% infiltrating). All the patients with infiltrating tumors went through rentgenotherapy, steroid and/or cyclophosphamid treatment.

Duration of the follow-up in the surgically treated group was about 8 yrs after operation, the longest being 20 yrs.

The results in the patients with thymoma, who underwent thymectomy, did not differ significantly from those without thymoma, 70% of these patients were asymptomatic on medication (steroids, azathioprin or cyclophosphamid).

ACQUIRED AND HEREDITARY NEUROGENIC LESIONS

(Assoc. Professor Katarzyna Rowińska)

The main problems were: the new concept of Guillain-Barré syndrome and remodelling of denervated motor unit.

A classical form of Guillain-Barré (G-B) syndrome is considered to be the acute inflammatory demyelinating polyradiculoneuropathy, in which morphological examination of the nerves reveals first of all foci of primary demyelination associated with infiltrates of lymphocytes and macrophages. Recently, some morphological descriptions indicating acute axonal changes have appeared. In our material examined electrophysiologically and morphologically different possibilities of axonal lesion in G-B have been presented and discussed. The block of conduction was found only in some cases of acquired neuropathies - mostly in pure motor neuropathies. The diagnostic yield of the sensory threshold level

changes in the peripheral nerve lesion was demonstrated in G-B and other neuropathic syndromes.

The motor unit desintegration and reintegration, is a process which occurs as a result of different kind of lesions (neurogenic, miogenic) and of the compensation of the damage. The above mentioned processes pass consecutive steps and each step of reintegration is characterized on the model of the motor neuron disease. One of the characteristic feature of the motor unit reintegration is the complexity of motor unit potentials (MUAP).

The complexity of each component - a component is more complex when it has more peaks and turns of different amplitudes and different frequency. The similarity of components - the signal is more complex when components differ among themselves.

The filling of signal - this factor depends on the number of components and relative duration of components and breaks.

The analysis of complex MUAP with satellite components based on the 231 electromyograms (EMG) was performed in 84 patients and 20 healthy volunteers.

The patients' group comprised cases of quickly progressing Amyotrophic Lateral Sclerosis (ALS) and the cases of slowly progressing benign and intermediate form of Spinal Muscular Atrophy (SMA).

Cases of Duchenne Muscular Dystrophy (DMD) were considered as s.c. diseases control.

The complex MUAPs appeared significantly more frequently in the progressing muscle diseases than in the control group and more frequently in the slowly progressing SMA than in quickly progressing ALS group.

In the SMA group a positive correlation between duration of the disease and complex MUAPs prevalence and a negative correlation between muscle force preservation and the number of the satellite components in one complex were found. In the DMD group there was no correlation between duration of the disease and the number of the complex MUAP. Statistical analysis revealed, however, a correlation between the muscle force and duration of the individual complexes. The results confirmed a hypothesis that there are different ways of the MU remodelling in the primary myopathic and neurogenic muscle lesions. In the primary muscular lesion the appearance of the satellite potentials reflects variability of the muscle fibers diameter. In the neurogenic lesion the satellites are the result of the increasing signal desynchronisation which takes place during the progressive de- and reinnervation. In both types of the muscle damage, however, the prevalence of the satellite components is the result of active remodelling of the motor unit.

A concept of the complex MUP potential classification is preserved on the basis of mathematical model. The complex internal structure of a potential reflects the pathological changes of the MU architecture and is a result of some remodelling and reorganization. The parameters describing the complexity of the MUAP are elaborated and complexity coefficient of a signal is defined.

DNA ANALYSIS IN DUCHENNE AND BECKER DYSTROPHY AND CHILDHOOD SPINAL MUSCULAR ATROPHY

Supported by the State Committee for Scientific Research: grant # 407799101 (Professor Irena Hausmanowa-Petrusewicz)

Dystrophy

DNA was isolated from 175 subjects of 41 families with Duchenne (Becker) dystrophy. DNA analysis was done using Southern blotting with application of 6 c DNA probes. For a rapid detection of delation PCR was introduced.

The reanalysis of 30 families previously diagnosed as limb-gridle dystrophy was made and 9 of them tourned out to be dystrophy of Becker's type. Dystrophin testing was performed in 65 male patients and in 12 females. One female patient with Duchenne-like clinical features tourned out to have a translocation and had no dystrophin, the other were manifesting carriers with reduced amount of dystrophin.

Among examined families some unusual ones were found e.g.: the coexistance in the same family of Becker and Duchenne phenotypes or obvious X-linked inheritance of Duchenne-like phenotypes with normal dystrophin.

SMA

Thirty five SMA families were examined in collaboraration with Laboratory of Genetic of Psychiatric Institute of Columbia University. All of them are mapped to chromosome 5, many of them express an intrafamilial clinical variability.

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PHYSIOLOGICAL EFFECTS OF INTERACTION BETWEEN PSYCHOLOGICAL AND PHYSICAL FACTORS

(Professor Krystyna Nazar)

In order to investigate relationships between psychomotor fitness, activity of the sympathoadrenal system and anaerobic threshold, in 22 young men blood lactate (LA), plasma catecholamines (CA) and multiple reaction time (RT) were determined during graded, incremental exercise. It was found that plasma CA concentrations increase exponentially during exercise with the thresholds at the work loads close to the blood LA threshold. It was also demonstrated that the subjects' psychomotor skill, estimated on the basis of RT measurements, improves with exercise intensity, reaches its optimum above LA and CA thresholds and then rapidly decreases.

To check the possibility that psychological stress impairs carbohydrate tolerance, oral glucose tolerance test (OGTT) was performed in 8 young healthy men under three conditions: (i) standard nonstressful, (ii) exposure to industrial noise (92 dBA) or (iii) performing the arithmetic Kraepelin's tasks. The stressors were applied for 20 min of each 30 min of OGTT. Venous blood glucose (BG) response to 75 g glucose ingestion was significantly lowered ($p<0.001$) when the subjects were exposed to noise in comparison with two other conditions, but the glucose-induced increases in plasma insulin, noradrenaline levels and blood pressure were not affected by the stressors. In an additional experiment it was proved that the lowered BG response to glucose load during exposure to noise is caused by diminished arterialization of venous blood due to the peripheral vasoconstriction. It is concluded that psychological stressors of moderate severity do not impair carbohydrate tolerance in healthy persons.

Continuing the study on the effects of carbohydrate restricted, ketogenic diet on metabolic and hormonal responses to exercise, it was demonstrated that the 3-day ketogenic diet results in an increased maximal oxygen uptake and anaerobic threshold estimated during graded exercise. Besides, in the subjects on this diet an elevation of the plasma β-hydroxybutyrate, free fatty acid and plasma catecholamine levels was found both at rest and after exercise, whereas the plasma insulin concentration was decreased. The exercise-induced increases in blood lactate were lower and decreases in blood pH, base excess and standard bicarbonate levels more pronounced on ketogenic than on normal diet.

Effects of low energy diet (1000 Kcal/day for 4 weeks) and phosphate supplementation on metabolic and endocrine responses to physical exercise and oral glucose load were examined in 36 overweight women. The data confirmed our

previous study showing an increase in the resting metabolic rate in dieting subjects treated with phosphates. However, this treatment had no influence on mechanical efficiency during exercise, and glucose-induced thermogenesis. No differences were found between the subjects supplemented with phosphates and those on Placebo in resting and post-exercise blood glucose, lactate, plasma free fatty acid, adrenaline, cortisol, growth hormone, insulin, and testosterone levels, whilst the respiratory exchange ratio was slightly higher and the plasma β-hydroxybutyrate lower with than without phosphate treatment. Post-exercise plasma adrenaline was reduced after 4 weeks of energy restriction only in the group on Placebo. Blood glucose, insulin and noradrenaline responses to glucose load were not affected by phosphate supplementation.

A pattern of changes in blood lactate was investigated in rats during multistage, incremental treadmill exercise. It was demonstrated, for the first time, that in rats the lactate threshold can be detected. It occurs at blood lactate levels of 4 mmol/l, similarly as in man, and shows high reproducibility. This experimental model was used to find out whether prolonged hyperadrenalinemia, induced by sc implantation of adrenaline tablets, releasing the hormone at a constant rate (approx. 1.6 μg/min) affects the anaerobic threshold. The results indicate that hyperadrenalinemia sustained for 12 h decreases exercise performance, and the intensity of exercise at which lactate threshold occurs. After more prolonged elevation of blood adrenaline (60 h) the anaerobic threshold returns to control values. The latter phenomenon may be, at least partly, due to the down regulation of adrenergic receptors.

To find out whether the impaired glucose utilisation by skeletal muscles, described previously in hypothyroid (THY) rats, could be reversed by prolonged activation of β-adrenergic receptors, both euthyroid and THY rats were implanted with slow releasing adrenaline tablets (see above) 12 h before sacrifice. In the soleus muscle the rates of 2 deoxyglucose (2DG) transport, lactate (LA) formation and glycogen synthesis were measured in vitro at various concentrations of insulin in the incubation medium. In THY rats hyperadrenalinemia increased the rate of 2DG transport to muscle cells and glycogen synthesis, but it did not influence lactate production. Responsiveness of all these processes to insulin was enhanced by adrenaline treatment and the insulin sensitivity of LA production and 2DG transport was improved. The data suggest that prolonged hyperadrenalinemia partly reverses the effect of thyroid hormone defficiency on muscle glucose utilization.

Continuing the study on an influence of skeletal muscle contractile activity on their sensitivity to insulin, it was shown that 15 min electrical stimulation of the rat sciatic nerve greatly increases the in vitro measured sensitivity of glucose transport, lactate production and glycogen synthesis to insulin of the soleus muscle impaired by previous (12 h before sacrifice) tenotomy. Extending the stimulation up to 30 min did not cause any further changes in insulin sensitivity either in tenotomized or in intact muscles.

RISK FACTORS OF PRIMARY HYPERTENSION: PROSPECTIVE STUDY

Supported by the State Committee for Scientific Research - grant # 413109101 (Professor Krystyna Nazar)

Twenty nine persons with exaggerated blood pressure (BP) response to physical exercise were identified among 145 male students aged 20-23 yrs with normal BP at rest. The aim of this study has been to find out whether elevated BP response to exercise is associated with any other hemodynamic, metabolic or hormonal abnormalities, and to follow up their evolution during at least three years. In the first year of the investigation 15 students with elevated (group E) and 10 students with normal (group N) BP response to exercise were examined. In 8 subjects from group E echocardiography revealed left ventricle hypertrophy but in none ECG abnormalities were found. Body mass index, fat content, waist to heap ratio, plasma lipid concentrations, as well as fasting blood glucose (BG), and plasma insulin (IRI) levels were similar in group E and N. Subjects from group E had also normal plasma catecholamine concentration and renin activity both at rest and during exercise, but their plasma levels of cortisol, and sodium concentration in erythrocytes were higher than in group N. During the oral glucose tolerance test (75 g) only in one subject from group E abnormal BG and plasma IRI responses to glucose load were noted, however, in this group significantly lower increases in cardiac output, and higher total peripheral resistance were found in comparison with group N.

INTRAMUSCULAR LIPID METABOLISM

(Assoc. Professor Leszek Budohoski)

A new method of measuring in vitro the labelled free fatty acid uptake and metabolism in the rat skeletal muscle was elaborated. This included determination of the optimal conditions of the soleus muscle incubation (time of incubation, concentrations of necessary substrates etc) as well as verification of the intramuscular free fatty acid (FFA) and triacylglycerol (TG) content estimation. Preliminary experiments were carried out to establish the relationship between the concentration of ^{14}C-palmitate in the incubation medium and the rate of labelled TG synthesis, CO_2 production and concentration of the labelled intramuscular FFA. Besides, the effects of glucose and insulin added to the the medium on the ^{14}C-palmitate uptake and metabolism were investigated. The results indicate that glucose, irrespectively of the insulin presence, enhances significantly the rate of intramuscular TG synthesis.

Changes in two forms of lipoprotein lipase (LPL) activity (heparin releasable and residual) and TG content in the rat soleus muscle were followed during 48h hyperadrenalinemia, produced by sc implantation of slow releasing adrenaline

tablets (1.6 μ/min). Both forms of LPL activity were significantly diminished after 6 and 12 hrs of hyperadrenalinemia, and then returned or even exceeded the control values. These changes can not be attributed either to plasma FFA, which were elevated throughout the whole 48 hrs or to muscle TG that were progressively increasing. The data suggest that adrenaline per se inhibits muscle LPL activity. The increase of the enzyme activity after 24 hrs of sustained hyperadrenalinemia may result from the down regulation of adrenergic receptors.

A MODEL OF CHRONICALLY EXPLANTED KIDNEY IN THE RAT (PRELIMINARY STUDIES)

(Professor Janusz Sadowski)

In previous studies we have successfully applied measurements of tissue electrical admittance (reciprocal impedance) for estimation of the electrolyte hypertonicity of the renal medulla in the rat. The studies were conducted in acute experiments performed in animals under barbiturate anesthesia, directly after extensive surgery necessary for exposure of the kidney. A serious limitation of such an approach has become apparent when we attempted to study hormonal control of the cortico-medullary electrolyte (mostly NaCl) gradient. It is known that both barbiturates and acute surgery are powerful stimulants of multiple hormonal systems, e.g. of the release of the antidiuretic hormone, a factor modfying the magnitude of the gradient.

In order to study physiological control of the medullary ionic hypertonicity in the kidney, an experimental model was developed enabling admittance measurements in the absence of acute surgery, under light anesthesia with alpha-glucochloralose, an agent devoided of vasopressin stimulating action.

In Wistar rats the left kidney was explanted out of the abdominal cavity under the flank skin. The renal artery and vein were left intact, passing across the flank muscles via an unsutured window within the original incision. The ureter was cut close to the bladder and exteriorized for urine collection.

The proper experiments were conducted 3 days later, under i.v. chloralose, 30-40 mg/kg body weight. Electrodes for admittance measurement were inserted into the kidney after cutting the sutures of the skin overlying the flank wound. Inspection of the exposed kidney confirmed its viability. The renal excretion data and the in vitro comparison of the medullary tissue composition indicated a moderate impairment of the explanted versus contralateral kidney function, by about 30%.

The model is of potential value for the study of the intrarenal salt gradient fluctuations, with but only minimal, anesthesia and in the absence of acute surgery. Its application can be extended to all experimental projects in which easy repeated access to kidney tissue (e.g. collecting biopsy material) is required. Before such attempts, more precise evaluation of the explanted kidney function, including measurements of the glomerular filtration rate, are necessary.

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RISK FACTORS OF CORONARY ARTERY DISEASE IN MIDDLE-AGED WOMEN

(Dr Ewa Wójcik-Ziółkowska)

Although the number of infarctions in female population increases the results of standard noninvasive tests conducted in the diagnosis of coronary artery disease (CAD) are often false positive (30%).

The study presented is a part of the project concerning the pathomechanism of coronary insufficiency in women. The aim of the investigation was to determine the risk factors of CAD in a group of 112 women. An attention has been focused on the following possible risk factors: obesity, smoking, glucose intolerance hormonal dysfunction, hypertension, family history of heart disease, hyperlipidemias.

The patients were divided into three groups: Group I - 70 women (mean age 51.7±7.3 yrs) were included to the study because of the anginal-like chest pain and/or abnormal resting ECG. Group II - 18 women (mean age 60.8±10.9 yrs) after myocardial infarction (MI). Group III - 24 women (mean age 44.7±7.8 yrs) consisted a control group without CAD symptoms and with normal ECG.

In all groups body mass index (BMI) was similar, although in group I and II overweight was frequently observed. The frequency of smoking habit was significantly greater in group I and III in comparison with the group II after MI. Glucose intolerance was often found in group II, whilst hormonal dysfunction was demonstrated in groups I and II but not in the control group. Hypertension occurred in the women from groups I and II only. Patients from group I and II had family history of heart disease. Hyperlipidemia was observed most frequently in the post-MI group, however, in the patients from the group II - the concentrations of blood lipids were significantly higher than in the control group.

It should be pointed out that six of the analysed risk factors were absent in the control group, without any CAD symptoms. Therefore, we conclude that presence of those factors is crucial in the process of qualifying the patients for the group with high risk of CAD.

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HORMONAL AND METABOLIC REACTION TO ACUTE MYOCARDIAL INFARCTION

(Professor Krystyna Cedro-Ceremużyńska)

During the last year, Cardiovascular Laboratory has been involved in clinical investigation carried out in the Department of Cardiology, Postgraduate Medical School in Warsaw.

Research program included:

1) Studies on the mechanisms influencing survival and outcome in acute myocardial infarction (AMI).

This study aims to assess separate and combined effects on vascular mortality of 3 treatments: nitrates, angiotensin-converting enzyme inhibitor and magnesium, added to currently standard therapy in patients with AMI. Our particular aim was to investigate metabolic, humoral and hemodynamic mechanisms influencing the course and outcome of AMI and underlying the effectiveness of these interventions.

Previous investigation of our group and of other authors have shown that the magnitude of adrenergic response to AMI and activation of renin-angiotensin--aldosterone system influence severity of clinical course and adversely affect the outcome of the disease. Therefore, in the patients enrolled into ISIS-4, we measure blood catecholamines and their urinary excretion, plasma renin activity, angiotensin II and aldosterone, as well as indirect indices of enhanced free generation, such as serum lipid peroxides, erythrocyte SOD activity, chemiluminiscent response of leukocytes. This is complemented by evaluation of the contractile function of the heart (Echo) and assessment of heart rhythm (24 h Holter monitoring). This study is blind, opening the code is planned for Antumn 93. Summing up of our results will then be possible.

2) Influence of antioxidant vitamins upon the indices of tissue lipid peroxidation and leukocyte free radical generation in acute myocardial infarction (AMI).

Damaging effect of oxygen free radicals upon integrity of cell membranes and extension of myocardial ischemic injury has been well documented in experimental studies. Enhanced free radical generation is a likely consequence of hormonal and metabolic response to AMI which may lead to exhaustion of endoge-

nous antioxidant defense mechanisms.

We have examined clinically available indices of enhanced free radical generation: chemiluminiscent response of isolated leukocytes to an activating agent, serum lipid peroxides, erythrocyte SOD activity as well as serum endogenous antioxidants, Vit. C and α-tocopherol, in patients with AMI. Patients routinely treated with currently standard medication are randomly assigned to Vit. C+E supplemented (orally 600 mg daily for 14 days) or non-supplemented group. After completion of the study planned for May-June 1993 (30 patients in each group) the results will be analysed to assess:

- oxidant-antioxidant balance in acute phase of AMI;
- the effect of supplementation with antioxidants upon the indices of free radical generation in the course of the disease.

The results may provide biochemical basis for routine supplementation with exogenous antioxidants in the course of myocardial infarction.

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NEURO-ENDOCRINE REGULATION OF CAPILLARY TRANSPORT OF CELLS INTO THE TISSUE SPACE AND LYMPHATICS

(Professor Waldemar L. Olszewski)

Lymphocyte circulation and migration through tissues is of crucial importance for the immune surveillance. The influence of thermal stress on lymphocyte recirculation was investigated in a rat model. After 8-hours hyperthermia (42°C), distribution of lymphocytes to spleen and lymph nodes was lower than in normothermic controls. Pharmacological sympathectomy (6-OHDA) abrogated these differences. Blocking of α-and β-adrenergic receptors on lymphocytes (Labetalol) did not influence the migration index, suggesting that catecholaminergic innervation of secondary lymphatic organs may influence lymphocyte mobilization after stress. The distribution of lymphocytes to bone marrow (BM), following thermal stress was much higher than in controls. Adrenalectomy abrogated this effect, while dexametazone caused an increased distribution of lymphocytes to BM, both in normothermic and hyperthermic rats. In vitro dexametazone-treated lymphocytes also showed a higher migration rate to BM. The results suggest that distribution of lymphocytes to BM may be regulated by endogenous glycocorticoids.

For the elimination of foreign antigen and inhibition of tumor cell growth, transport of immune cells to tissue space remains the main problem. In the present study the effect of increased venous pressure and hyperthermia (42°C) on lymphocyte migration into the afferent and efferent lymph of dog hindlimb was investigated. Hyperthermia increased the leukocyte output into afferent lymph 6-times, whereas into the efferent - 85-times. Increased venous pressure enhanced leukocyte output into afferent lymph twice, whereas into efferent - decreased 3-times. Hyperthermia, therefore, stimulated leukocyte migration to skin and lymph nodes to the higher degree than did increased venous pressure.

TRANSPLANTATION OF ALLOGENEIC CELLS AND TISSUES

(Professor Waldemar L. Olszewski)

Rat allogeneic heart or kidney grafts are rejected within 6-8 days, while lymphoid cells, transplanted i.v. across the MHC barrier are eliminated within 6 hr.

In the present studies, the mechanism of accelerated elimination of allogeneic lymphocytes by DST-treated recipients was studied. It was shown that DST effect on i.v. transplanted lymphocytes may be mediated by non-cytotoxic opsonizing antibodies. They probably block the donor specific MHC antigen epitopes on organ graft endothelial cells, thereby preventing the attack of circulating donor specific cytotoxic lymphocytes. At the same time, however, they opsonize i.v. transplanted lymphocytes, facilitating their destruction in circulation and host lymphoid organs.

Another study was devoted to the bone marrow (BM) grafting. Repopulation of bone marrow cavities after i.v. transplantation of BM cells is a slow process, whereas engraftment of BM in hind limb graft leads to repopulation of hemopoietic system of irradiated recipient already in 10 days, due to preserving the functional relationship of hemopoietic and stromal cells in the bone. Since engraftment of vascularized BM in hind limb is a complicated procedure, it was studied whether the implantation of BM coagulum to liver and spleen will be sufficient for recipient repopulation. It was found, that after 10 and 30 days, histological structure of BM was preserved in 30% of experiments on the average.

REGULATORY FUNCTIONS OF LYMPHOID CELLS

(Professor Waldemar L. Olszewski)

In the first part of this project the mechanism of immune "enhancement" was studied. The question was asked, what is the distribution of donor antigen and alloserum in heart and skin graft. It appeared that alloserum against donor antigens did not accumulate in grafts, despite of its effect on prolongation of graft survival. The results suggest that alloserum acts on the effector arm of the recipient immune response.

Another problem studied was the effect of CyA on in vivo migration of i.v. injected lymphocytes. The recipient of lymphocytes was treated i.v. with CyA (10 mg/g b.w./day, during 7 days) before injection of syngeneic ^{51}Cr labelled lymphocytes. It was found that thoracic duct lymphocytes are distributed in CyA-treated recipient similarly to saline and CyA dissolvent (Kremofor Elger)-treated recipient. Only in vivo CyA-treated lymphocytes (from treated donor) showed a diminished migration to blood, and increased accumulation in the lymphoid tissues.

An original test of lymphoid cell adherence to liver cells was also signed for the study of the mechanism of selective trapping of lymphocytes in liver sinusoids and, especially, for identification of adhesion molecules, responsible for the adherence process. Human blood lymphocytes, placed on frozen sections of hu-

man or rat liver, adhered to endothelial cells of sinusoids, Kupffer cells, while to a lesser degree, hepatocytes. Among lymphocytes, suppressor/cytotoxic cells ($OX8^+$) displayed the highest adherence abilities. The number of cells which adhere to liver cells depends on their activation as well as on activation of endothelial and Kupffer cells.

A study was devoted to the problem of phenotypical characterization of human peritoneal cells. It was found that most peritoneal $CD8^+$ (75%) and $CD4^+$ (90%) T lymphocytes belong to the population of memory cells, (in blood 30% and 50%, respectively).

IMMUNE RESPONSE AFTER TRAUMA

(Professor Waldemar L. Olszewski)

Tumor cells, both primary and metastasizing, proliferate, at least at the initial stage, in the normal tissue fluid. Lymph is the tissue fluid drained via lymphatics. In the present studies, the effect of IL1α, IL1β and IL6, the cytokines present in human skin lymph, on tumor cell growth was investigated. The strongest antiproliferative activity was displayed by IL6. Since in human skin lymph these cytokines were present together, their effect in combination was studied. The results suggest that the effect of their action in combination, may differ from that observed when a single cytokine is present. To confirm that skin cytokines may be responsible for antiproliferative effect of lymph, blocking of their activity was performed, using anti-cytokine antibodies. Blocking of IL1α, IL1β and IL6 activity abrogated the inhibitory effect of lymph on tumor cell proliferation. These cytokines may be, therefore, responsible for regulating tumor cell proliferation in human skin.

In another study, the effect of syngeneic blood transfusion (SBT) on subpopulations and functions of mononuclear cells from blood (B), spleen (SPL) and bone marrow (BM) was examined in rats. The model corresponds to the clinical situation of massive blood transfusions, which affects the immune responsiveness. SBT brought about an increase in frequency of myeloid and lymphoid lineage cells and $OX7^+$ stem cells in BM, as well as release of $OX7^+$ cells in blood circulation. Decreased responsiveness of B, SPL and BM cells to mitogens may reflect a diminished frequency of immunocompetent cells due to dilution by less mature BM cells or inhibition of DNA synthesis capacity by putative factors produced in response to surplus of blood cells.

A study considered the problem of the potential source of humoral factors, following trauma, accelerating in vivo hemopoiesis. It was found, that the increase in BM volume was most efficient after a large tissue trauma, while infiltrating and proliferating cells in the anastomotic wound seem to be a potent source of cytokines for BM hemopoietic cells.

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Head: Professor Janusz Nauman

NEW DRUGS FOR NEW METHODS OF NEUROLOGICAL TREATMENT

(Assoc. Professor Andrzej W. Lipkowski)

Traditional search of drugs for neurological disfunction treatment is focussing on compounds with high pharmacological permeability, and as high as possible selectivity. However, such approach has limitations, because the nervous receptor systems are not selective themselves - the selectivity being a result of space selective secretion. Thus, following nature, we are looking for neurological drugs which have low permeability and their action may be regulated at the place of distribution. The first targets of our research are new drugs for pain treatment. New technics of anesthesia allow to administre drugs directly to the place of their needed action. The neuropeptide analogues with low permeability may create a new generation of drugs useful for these anesthesia technics.

THE LIBRARY
5 Pawińskiego Str., 02-106 Warsaw
Telephone: 658 46 77

Head: Krystyna Marczakowska

The library constitutes one Department of the Medical Research Centre and acts as an information source for scientists.

Scope and the subject profile: physiology, neurosciences and experimental surgery including transplantology.

Present holdings:
books - monographic and serial volumes (Polish and foreign) - 17412 periodicals, newspapers (number of titles) - 500

Reference aids:
cataloques - alphabetical: book, periodicals and microfiches
- subject: books
main card-files - bibliographical list of papers published by scientists of the Medical Research Centre Polish Academy of Sciences from 1967.

Users:
scientific workers of the Medical Research Centre, interlibrary loans available for all scientific Institutes in Poland and abroad.

Bibliography of library: a list of new books and current periodicals is prepared weekly. On the basis of the Scientific Citation Index a report of citations of papers published by MRC Scientists in 1991-1992 was prepared. It contains 1193 citations.

MEDIPAN
1/13 Flory Str., 02-586 Warsaw
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Head: Andrzej Lasek

MEDIPAN is a manufacturer of a special equipment for medical service units' needs.

This equipment is represented by microprocessor infusion drip pumps and microprocessor infusion syringe pumps.

Once it had carried on a wide range of construction and production activities. To withstand competition with foreign products of this type and manufacture equipment of the same technical level as the equipment of well-known world companies MEDIPAN had to diminish the scope of its constructional works. In the result the last year's activity can be characterized by visible specialization in the field of construction and production of infusion drip pumps and infusion syringe pumps. Models manufactured in the previous years were considerably modernized according to the latest world construction and technical solutions and the new ones were produced in MEDIPAN.

Models 601 SP and 605 SP Microprocessor Infusion Drip Pumps represent the first group of equipment. The stress was put here on precision of operation and energy saving.

Employment of a new type of the instrument's enclosure resulted in softening the driving system operation and weight reduction, whereas modification of microprocessor control system increased the flow accuracy.

Model 611 Microprocessor Infusion Syringe Pump has been improved by adapting its program to cooperation with three sizes of syringes (10, 20, 50 ml) instead of one (50 ml). Construction works were completed and a set of a quite new type of instrument - Model 604 Microprocessor Infusion Drip Pump - was produced.

Techno-economic data and therapeutic-clinical directions were worked out for the Model 612 Microprocessor Infusion Syringe Pump, which represents completely new, more sophisticated type of infusion pomps, on the highest world technical level. It cooperates with 6 sizes of syringes and enables administration of a drug with the flow rate authomatically calculated by the pump's memory on the basis of such parameters as: patient's body mass, a dose of a drug and its concentration.

Each instrument manufactured in MEDIPAN has the approval of the Polish Ministry of Health and Social Welfare as well as complies with the EEC standards.

Specialization and endeavours to remain competitive on the world markets have led to the situation that MEDIPAN's constructions are ahead of other Polish constructions on this field.

INTERNATIONAL COOPERATION

VISITING SCIENTISTS

Department of Neurophysiology

K. Murphy	Department of Medicine, Charing Cross and Westminster Medical School, University of London, United Kingdom
I. Poliaczek	Department of Medicine, Komensky University, Martin, Czecho-Slovakia
R. Torrance	Laboratory of Physiology, University of Oxford, United Kingdom

Department of Neurochemistry

S. Pfeiffer	Department of Microbiology, University of Connecticut Health Center, USA

Department of Neuropathology

A. Lossinsky	Institute for Basic Research and Developmental Disabilities, New York, USA
D.L. Meyer	Laboratory of Neuroanatomy, Georg-August University, Geting, Germany

Laboratory of Developmental Neuropathology

K. Shütt	Institute of Neuropathology, University Clinic Steglitz, Berlin, Germany

Department of Neurosurgery

A.L. Krawczuk G.A. Lichterman	Institute od Neurosurgery, Medical Academy of Sciences, Moscow, Russia

Neuromuscular Unit

A. Eisen	University of Vancouver, Canada
B. Hecht	Institute of Pathophysiology, Academy of Medical Sciences, Moscow, Russia
K. Zerres S. Rudnik-Schönborn D. Röhrig	Institute for Human Genetic, Bonn, Germany

Department of Applied Physiology

D. Desplanches	Laboratory of Physiology, Department of Medicine Lyon Grange Blanche, Lyon, France
O. Hanninen	Department of Physiology, University of Kuopio, Finland
H.C.G. Kemper	Department of Health Science, Faculty of Human Movement Sciences, University of Amsterdam, Netherlands
S. Porta	Department of Functional Pathology, University of Graz, Austria
R. Terjung	Department of Physiology, College of Medicine, State University of New York, USA

Department for Surgical Research and Transplantation

P.B. Sivaraman	Department of Urology, Chengalput Medical College, Chengalput, Madras, India

VISITS ABROAD

Department of Neurophysiology

K. Budzińska	Institute of Physiology, University of Florence, Italy
Gromysz H.	Laboratory of Physiology, Department of Medicine, University of Nancy, France
Pokorski M.	Laboratory of Physiology, Department of Medicine, University of Nancy, France
	Department of Biochemistry and Biology, University of Valladolid, Spain
	Department of Pharmacology and Therapeutics, Faculty of Medicine, Porto, Portugal
	Fakulty Detskeho Lekarstvi, University Karlovy, Praha, Czecho-Slovakia
J. Romaniuk	Department of Medicine, Metro Health Medical Center, Cleveland, Ohio, USA (long term visit)

Department of Neurochemistry

K. Domańska-Janik	Laboratory of Neurochemistry, University of Vadois, Lausanne, Switzerland
W. Gordon-Majszak	Institute for Basic Research and Developmental Disabilities, New York, USA (long term visit)
M. Łałowski	Department of Pathology, New York Medical, Research Centre of Mental Disabilities, New York, USA (long term visit)
J. Łazarewicz	Institute of Neurobiology, University of Goteborg, Sweden

M. Puka	Institute of Neurobiology, University of Goteborg, Sweden (long term visit)
M. Samochocki K. Domańska-Janik	Institute of Biochemistry, University of Perugia, Italy (long term visit)
J. Strosznajder	Baylor College of Medicine, Houston, Texas, USA (long term visit)
J. Waśkiewicz	Department of Chemistry and Biochemistry, University of Oklahoma, Norman, USA (long term visit)
H. Wikieł	Roswell Park Cancer Institute, Buffalo, USA (long term visit)
T. Zalewska	Muscle Biology Group, College of Agriculture, University of Arizona, Tucson, USA (long term visit)

Department of Neuropathology

J. Albrecht	Department of Pharmacology and Toxicology, Albany Medical Center, Albany USA (long term visit)
L.Faff-Michalak	Carl-Ludwig Institut für Physiologie, Universitat Leipzig, Germany
W. Hilgier	Department of Emergency Medicine, Wrigh State University, Dayton, Ohio, USA (long term visit)
S. Januszewski E. Kida	Institute for Basic Research and Develop mental Disabilities, New York, USA (long term visit)
S. Krajewski	La Jolla Cancer Research Foundation, California, USA (long term visit)
M. Ratajczak	Department of Pathology and Laboratory Medicine, University of Pennsylvania, Philadelphia, USA (long term visit)

Laboratory of Developmental Neuropathology

M. Dąmbska D. Maślińska	Institute for Basic Research and Developmental Disabilities, New York, USA (long term visit)

Laboratory of Ultrastructural Nervous System

B. Gajkowska	Cancer Research Center, CNRS, Villejuif, France (long term visit)

Department of Neurosurgery

Z. Czernicki	Department of Neurosurgery, Tokyo Medical and Dental University, Japan (long term visit)
Z. Czernicki J. Jurkiewicz	Department of Neurosurgery, St. Jacob Hospital, Vilna, Lithuania
Z. Czernicki J. Jurkiewicz	Burdenko Neurosurgery Institute, Moscow, Russia

Neuromuscular Unit

I. Hausmanowa-Petrusewicz	Department Pediatrics, Hadassah Hospital, Jerusalem, Israel
K. Rowińska-Marcińska	Department of Neurology, University of Helsinki, Finland
K. Sieradzan	Department of Anatomy and Developmental Biology, University College London, United Kongdom (long term visit)

Department of Applied Physiology

Z. Brzezińska	Department of Rehabilitation Medicine, University of Goteborg, Sweden (long term visit)
G. Cybulski	Centre for Biological and Medical Systems, Imperial College of Science, Technology and Medicine, London, United Kingdom (long term visit)
L. Dobrowolski	Institute of Physiology, University of Heidelberg, Germany (long term visit)
R. Grucza	Department of Physiology, University of Kuopio, Finland
H. Kaciuba-Uściłko K. Nazar	Department of Pathophysiology, University of Graz, Austria
E. Kompanowska-Jezierska	Institute of Physiology, University of Copenhagen, Denmark (long term visit)
B. Kruk	Laboratory of Work Physiology, Medical Faculty Pitie-Salpetriere, CNRS, Paris, France
K. Krzemiński	Department of Health Sciences, Sargent College of Allied Health Professions, Boston University, USA (long term visit)
J. Sadowski	Department of Physiology and Biophysics, University of Lund, Sweden Panum Institute, Copenhagen, Denmark

Cardiovascular Laboratory

K. Cedro-Ceremużynska	Wellcome Research Laboratories, London, United Kingdom

Department of Surgical Research Transplantation

P. Bryła	Thanjavur Medical College, Thanjavur, India
	Tuberculosis Research Centre, Madras, India
	Vector Control Research Centre, Pindocherry, India
H. Gałkowska	Department of Surgery, University of Turku, Finland
I. Grzelak	Norway Radium Hospital, Oslo, Norway (long term visit)
U. Kubicka	Tuberculosis Research Centre, Madras, India
B. Łukomska	Laboratoire des Interactions Cellulaires, University of Bordeaux, France
W. Olszewski	Institute for Surgical Research, University of Munich, Germany
	Department of Human Biology, University of Kassel, Germany
	Norwegian Radium Hospital, Helsinki, Norway
	Thanjavur Medical College, Thanjavur, India
	Vector Control Research Centre, Pindocherry, India
	Tuberculosis Research Centre, Madras, India
	Hopital Cognac-Jay, Paris, France
	British Heart Foundation, London, United Kingdom

Department of Endocrinology

A. Lipkowski	Department of Chemistry, University of Arizona, Tucson, USA (long term visit)

PARTICIPATION IN INTERNATIONAL MEETINGS

Workshop on "Therapeutic Principles in Spinal Muscular Atrophy", Karlsruhe, Germany, January 10-12.
I. Hausmanowa-Petrusewicz

12th ENMC International Workshop "The Limb Girdle" Muscular Dystophies, Baarn, Netherlands, February 28 - March 1.
I. Hausmanowa-Petrusewicz

Congress of Swiss Society of Experimental Biology, Basel, Switzerland, March 9-10.
K. Domańska-Janik

3rd International Symposium of Lymphology, Lisbon, Portugal, March 19-21.
W.L. Olszewski

92th Congress of Japan Surgical Association and 2nd Symposium of the Japan-Poland Society for Exchange in Surgery: "Surgery Toward 21st Century", Tokyo, Japan, March 25-28.
B. Łukomska, W.L. Olszewski

Conference for Liver Research, Ashikawa, Japan, March 29.
B. Łukomska, W.L. Olszewski

2nd International Symposium on Endothelium-Derived Vasoactive Factors, Basel, Switzerland, April 22-25.
G. Adamczyk

First International Congress of the Cell Transplant Society, Pittsburgh, USA, May 31 - June 4.
W.L Olszewski

43 Jahrestagung der Deutschen Gesselschaft für Neurochirurgie, Frankfurt am Main, Germany, May 10-13.
J. Jurkiewicz

2nd International Symposium of Neuroanesthesia, Łódź, Poland, May 15-16.
J. Berdyga, Z. Czernicki, J. Jurkiewicz, G. Stępińska

27th Congress of the European Society for Surgical Research, Zaragoza, Spain, May 20-23.
P. Bryła, M. Jaskłowska-Englisz, W.L. Olszewski, D. Sadowska-Szablisty

International Congress of Electromyography and Clinical Neurophysiology, Jerusalem, Israel, June 8-12.
I. Hausmanowa-Petrusewicz

7th European Colloquium of Renal Physiology, Napoli, Italy, June 12-26.
L. Dobrowolski, E. Kompanowska, J. Sadowski

3rd International Symposium of Lymphology, Buenos Aires, Argentina, June 17-19.
B. Łukomska, W.L. Olszewski

2nd International Symposium on Dendritic Cells in Fundamental and Clinical Immunology, Amsterdam, Netherlands, June 21-25.
H. Gałkowska

7th International Catecholamine Symposium, Amsterdam, Netherlands, June 22-26.
H. Kaciuba-Uściłko, K. Nazar

Meeting of International SMA Consortium, Bonn, Germany, June 26-28.
I. Hausmanowa-Petrusewicz

4th European Meeting of Neuropathology, Berlin, Germany, July 14-19.
M. Barcikowska, M. Dąmbska, H. Drac, A. Fidziańska, B. Gajkowska, A. Kapuściński, H. Kroh, I. Kuchna, M.J. Mossakowski, M. Samochocki, J. Strosznajder, G. Szumańska, M. Walski

First International Symposium on Neurobiology and Neuroendocrinology of Aging, Bregenz, Austria, July, 19-23.
M. Barcikowska

21st Annual Meeting of the Federation of European Biochemical Societies (FEBS'92), Dublin, Ireland, August 9-14.
M. Samochocki

9th General Meeting of the European Society for Neurochemistry, Dublin, Ireland, August 16-21.
K. Domańska-Janik, L. Faff-Michalak, L. Jabłońska, M. Łałowski, M. Puka, M. Samochocki, J. Strosznajder, B. Zabłocka

14th International Congress of the Transplantation Society, Paris, France, August 16-21.
M. Jaskłowska-Englisz, B. Łukomska, M. Maksymowicz, W.L. Olszewski

6th International Symposium on Cells of the Hepatic Sinusoid, Antwerp, Belgium, August 23-30.
W.L. Olszewski

8th International Congress of Immunology, Budapest, Hungary, August 23-28.
P. Bryła, M. Jaskłowska-Englisz, U. Kubicka, A. Namysłowski

2nd Annual Congress of European Respiratory Society, Viena, Austria, August 29 - September 3.
W. Janczewski, M. Pokorski, M. Szereda-Przestaszewska

11th International Meeting on Neuromuscular Diseases, Marseille, France, September 10-12.
I. Hausmanowa-Petrusewicz

First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 20-23.
J. Albrecht, M. Barcikowska, E. Kida, M. Dąmbska, K. Domańska-Janik, H. Drac, L. Faff-Michalak, I. Hausmanowa-Petrusewicz, L. Jabłońska, W. Karczewski, M. Krynicki, I. Kuchna, J.W. Łazarewicz, E. Łuczywek, D. Maślińska, M.J. Mossakowski, M. Muzylak, R. Pluta, M. Puka, K. Rowińska-Marcińska, E. Salińska, M. Samochocki, J. Sypecka, B. Zabłocka

International Obesity Conference: "Ephedrine, Xanthines and Other Thermogenic Drugs to Assist the Dietary Management of Obesity", Geneva, Switzerland, September 24-26.
A. Ziemba

1st Meeting of the European Federation of Microsurgical Societies, Roma, Italy, September 26-29.
W.L. Olszewski

8th International Symposium of the European Alzheimer's Disease Association, Brussels, Belgium, September 23-27.
M. Barcikowska

National Institutes of Health Experimental Immunology Study Section Workshop: "Molecular Immunology and Prospects for Cancer Immunotherapy", St. Petersburg Beach, Florida, USA, October 3-4.
B. Łukomska

8th International Natural Killer Cell Workshop and First Meeting of the Society for Natural Immunity: "Molecular and Cellular Aspects of Natural Killer Cell Triggering and Signalling", St. Petersburg Beach, Florida, USA, October 4-6.
B. Łukomska

Symposium "Intrakranieller Druck, Hirnodem und Hirndurchblutung", Lubeck, Germany, October, 29-31.
Z. Czernicki

25th Danube Symposium for Neurological Sciences, Budapest, Hungary, November 4-7.
M. Barcikowska, J. Mossakowski

2nd International Conference on Advances in Pulmonary Rehabili- tation and Management of Chronic Respiratory Failure; Prevention of hypoxaemia in COPD, Venice, Italy, November 4-7.
M. Pokorski

2nd Japan Symposium on Peptide Chemistry, Shizuoka, Japan, November 9-13.
A. Lipkowski

65th Annual Scientific Sessions of the American Heart Association, New Orleans, USA, November 16-19.
K. Cedro-Ceremużyńska

1st International Seminar on Biological Signals Processing, Gliwice, Poland, November 16-20.
W. Niewiadomski

SCIENTIFIC DEGREES

DOCTOR'S DEGREES

Leszek Dobrowolski

Role of prostaglandins in modulation of the cortico-papillary electrolyte gradient in rat kidney

(Department of Applied Physiology)

Elżbieta Kompanowska-Jezierska

Vasopressin control of the cortico-papillary electrolyte gradient in rat kidney

(Department of Applied Physiology)

Maciej Krynicki

The mechanisms of influence of hyperthermia on whole body distribution of recirculating lymphocytes

(Department for Surgical Research and Transplantation)

Elżbieta Salińska

Mechanisms of ischemia-evoked changes in extracellular calcium concentration in rabbit hippocampus in vivo

(Department of Neurochemistry)

HABILITATIONS

Barbara Kruk

Interrelationship between metabolism and body temperature during exercise

(Department of Applied Physiology)

Ryszard Pluta

Attempt to prevent the consequences of complete cerebral ischemia in rabbit by use of prostacyclin

(Department of Neuropathology)

Katarzyna Rowińska-Marcińska

The analysis of the activity of compound potentials motor unit

(Neuromuscular Unit)

SCIENTIFIC MEETINGS ORGANIZED BY THE MEDICAL RESEARCH CENTRE

Practical Course of Staining with Monoclonal Antibodies, February 5-7, sponsored by DAKOPATTS, Denmark

Symposium "Postthrombophlebitic Syndrome, leg ulcers", March 12, sponsored by Lek Lubljana, Yugoslavia

Experimental and Clinical Studies of Brain Ischemia. April 25

Symposium "Immunological Problems in Surgery, Transplantology and Oncology - Diagnostic and Treatment, Clinical and Experimental Studies", October 8, sponsored by Ortho Diagnostik System

Practical Course of Staining with Monoclonal Antibodies, October 14-15, sponsored by DAKOPATTS, Denmark

24th Course of the Basis Microsurgical Techniques, October 25-27, sponsored by Cyanamid, USA

LIST OF PUBLICATIONS

Original works

1. Adamczyk G., Lembowicz K., Walski M., Olszewski W.L.: Vasa vasorum and endothelial cell function in veno-venous grafts. Journal of Vascular Research 1992, 29, 75-76.

2. Albrecht J.: Combination of diclofenac and codeine in the treatment of postoperative pain. MED-WELT. 1992, 43, 6, 515-519.

3. Badurska B., Ryniewicz B.: Immunosupressive treatment for juvenile myasthenia gravis. Europ. J. Pediat. 1992, 151, 215-217.

4. Barcikowska M., Kida E., Joachimowicz E., Siekierzyńska A.: Cerebellar granular layer degeneration in small cell lung cancer: paraneoplastic cerebellopathy or artifact? Neuropatol. Pol. 1992, 30, 2, 155-163.

5. Barcikowska M., Kujawa M., Wiśniewski H.M.: Beta-amyloid deposits with- in the cerebellum of persons older than 80 years of age.Neuropatol. Pol. 1992, 30, 3-4, 283-291.

6. Barcikowska M., Mirecka B., Papierz W., Bogucki M., Niewodniczy A., Liberski P.P.: Alzheimer'd disease case with clinical picture mimic Creutzfeldt-Jacob disease. Neurol. Neurochir. Pol. 1992, 43, 703-710.

7. Berger J.R., Scott G., Albrecht J., Belman A.L., Tornatore C., Major E.D.: Progressive multifocal leukoencephalopathy in HIV-1-infected children. AIDS 1992, 6, 8, 837-841.

8. Bergan T., Jorgensen N., Olszewski W.L., Zhang Y.: Azithromycin pharma- cokinetics and penetration to lymph. Scand. J. Infect. Dis. 1992, Suppl. 83, 15-21.

9. Bojarski P., Marchel A., Kroh H.: Intramedullary metastatic tumour. Neurol. Neurochir. Pol. 1992, 26, 3, 393-398 (in Polish).

10. Bryła P., Olszewski W.L.: Transcapillary transport of immune cells from blood to afferent and efferent lymph. Immunologia Polska 1992, 17, 176-177 (in Polish).

11. Budohoski L., Opas M.: Effects of insulin and tumor promoting, TPA, on glucose transport and metabolism in retinal pigmental epithelium in vitro. Biochem. Int. 1992, 27, 777-782.

12. Carr D.B., Lipkowski A.W.: Mechanism of opiate analgesic agents. In: Principles and practice of anesthesiology. Eds.: B. Covino, J. Tinker, M. Rodgers. Mosby, St. Louis, 1992, chapter 52.

13. Ceremużyński L., Barcikowski B., Lewicki Z., Wutzen J., Gordon-Majszak W., Famulski K.S., Kłoś J., Herbaczyńska-Cedro K.: Stress-induced injury of pig myocardium is accompanied by increased lipid peroxidation and depletion of mitochondrial ATP. Exp. Pathol. 1991, 43, 213-220.

14. Challiss R.A.J., Richards S.J., Budohoski L.: Characterization of the adenosine receptor modulating insulin action in rat skeletal muscle. Eur. J. Pharmacol. 1992, 226, 121-128.

15. Chrapusta S., Grieb P.: Evidence for sex steroid receptors in feline brainstem. Neuroscience Letters 1992, 142, 167-170.

16. Czernicki Z.: Brain injury and edema. In: Microcirculation of the Brain. Eds. G. Mchedlishvili, M. Tomita, R. Tuma. Nova Science Publishers Inc., NewYork, 1992, pp. 252-254.

17. Czernicki Z.: Evaluation of intracranial pressure changes using transcranial Doppler. Neurol. Neurochir. Pol. 1992, 3, 375-382 (in Polish).

18. Czernicki Z., Berdyga J., Stępińska G., Jurkiewicz J.: Application of physiological loadings in evaluation of intracranial volume-pressure relations. An experimental study. Neurol. Neurochir. Pol. 1992, 5, 677-684 (in Polish).

19. Czernicki Z., Uchman G.: Rheological changes in neurological patients. Anest. iInten. Ter. 1992, 5-6, 566 (in Polish).

20. Czernicki Z., Walecki J., Jurkiewicz J., Grochowski W., Tychmanowicz K.: Intracranial volume reserve determination using CT images, numerical analysis and lumbar infusion tests. An experimental study. Acta Neurochir. 1992, 115, 43-46.

21. Dąbrowski M., Gałkowska H., Olszewski W.L.: Inhibition of dendritic cell functions and traffic in the canine afferent lymph with anti-dendritic cell sera. In: Progress in Lymphology, XIII. Eds.: R.V. Cluzan, A.P. Pecking, F.M. Lokiec. Excerpta Medica, International Congress Series 994, 1992, 205-207.

22. Dąmbska M.: Perinatal damage of brain stem depending on the maturity of its structures. Neuropatol. Pol. 1992, 30, 2, 91-97.

23. Dąmbska M., Kuchna I., Walkiewicz W., Nowicki K.: Neuropathological study of 8 cases clinical Ray syndrome. Neurol. Neurochir. Pol.1992, 26, 319-326 (in Polish).

24. Dąmbska M., Maślińska D.: Effect of selected cytostatic drugs administration on the brain of young rabbit. Neuropatol. Pol. 1992, 30, 1, 57-64.

25. Dąmbska M., Maślińska D., Kuchna I.: Astrogliosis in the temporal lobe of newborn infants who died in the perinatal period.Neuropatol. Pol. 1992, 30, 3-4, 243-251.

26. Dąmbska M., Maślińska D., Pluta R.: The effect of some exogenous factors in the formation of intranuclear membranaceus inclusions in the nerve cells. Acta Neurobiol. Exp. 1992, 52, 37-40.

27. DiMarco A.F., Romaniuk J.R., Supiński S.: Parasternal and external intercostal responses to various respiratory maneuvers. J. Appl. Physiol. 1992, 73(3), 979-986.

28. Dobrowolski L., Sadowski J., Kompanowska-Jezierska E.: Conductance studies of rat renal medulla for rapid estimation of extracellular electrolyte concentration. Clin. Phys. Physiol.Meas. 1992, 13, 257-262.

29. Domańska-Janik K., Zalewska T.: Effect of brain ischemia on protein kinase C. J. Neurochem. 1992, 58, 1432-1439.

30. Domańska-Janik K., de Nechaud B., Inomata M., Kawashima S., Zalewska T.: Calcium-activated neutral protease (cANP) in normal and dysmyelinating mutant paralytic tremor rabbit myelin. Mol. Chem. Neuropathol. 1992, 16, 279-287.

31. Domańska-Janik K., Pylova S.: Receptor modulation of cAMP accumulation in rat brain particulate fraction after ischemia. Involvement of protein kinase C. Mol. Chem. Neuropathol. 1992, 17, 65-77.

32. Durowicz S., Cybulska E., Olszewski W.L., Lie T.: Trapping of lymphocytes in liver sinusoids. Polski Przegląd Chirurgiczny 1992, 64, 769-777 (in Polish).

33. Durowicz S., Sadowska-Szablisty D., Cybulska E., Olszewski W.L.: Selective trapping of lymphocytes in liver sinusoids. Immunologia Polska 1992, 17, 190-191 (in Polish).

34. Dziduszko J., Stępińska G.: Pulmonal artery embolism as a cause of sudden death in neurosurgical patients. Pol. Tyg. Lek. 1992, 47, 34-35, 730-732 (in Polish).

35. Dziduszko J., Żarski S., Horsztyński D., Piróg A.: Prognostic significance of evoked spinal potentials in surgical treatment of lumbar disc prolapse. Neurol. Neurochir. Pol. 1992, 1, 178-184 (in Polish).

36. Emeryk B., Rowińska-Marcińska K., Nowak-Michalska T., Sawicka E.: Muscular fatigability in mitochondrial myopathies in electrophysiological study. Electromyogr. Clin. Neurophysiol. 1992, 32, 4-5, 235-245.

37. Fersten E., Łuczywek E.: The role of brain hemispheres in facilitating of the perception of verbal material. Studia Psychol. 1992, 30, 2, 153-167 (in Polish).

38. Fersten E., Szeląg E., Łuczywek E.: Lateralization of emotional processes in the human brain. Studia Psychol. 1992, 30, 2, 141-152 (in Polish).

39. Fidziańska A., Drac H., Glinka Z.: Inclusion body myositis (IBM). Morphological study. Neuropatol. Pol. 1992, 30, 3-4, 197-205.

40. Fidziańska A., Goebel H.H.: Phagocytic capacity of human muscle fibres. Human Pathol. 1992, 23/9, 1044-1047.

41. Gadamski R., Kroh H.: Immunoreactivity of astroglia in the hippocampus of the Mongolian gerbil during short survival following brief ischemia. Neuropatol. Pol. 1992, 30, 3-4, 219-227.

42. Gadamski R., Mossakowski M.J.: Asymmetric damage of the CA1 sector of Ammon's horn after short-term forebrain ischemia in Mongolian gerbils. Neuropatol. Pol. 1992, 30, 3-4, 207-217.

43. Gajkowska B.: Effect of gamma butyrolactone on the hypothalamo-neurohypophyseal system of the gerbil brain after ischemic injury. J. Hirnforschung 1992, 33, 3, 277-294.

44. Gajkowska B., Gadamski R., Mossakowski M.J.: Influence of short-term ischemia on the ultrastructure of hipocampal gyrus in Mongolian gerbil. III Synapses in late stage of the pathological process. Neuropatol. Pol. 1992, 30, 1, 13-28.

45. Gajkowska B., Mossakowski M.J.: Calcium accumulation in synapses of the rat hippocampus after cerebral ischemia. Neuropatol. Pol.1992, 30, 2, 111-125.

46. Gajkowska B., Szumańska G., Gadamski R.: Ultrastructural alternation of brain cortex in rat following intraperitoneal administration of mercuric chloride. J. Hirnforsch. 1992, 33, 4-5, 471-476.

47. Gajkowska B.: Viron A.: Selective localization of synaptophysin in hypothalamo-hypophyseal system of rat by use of immunogold technique. Neuroendocrinol. Lett. 1992, 14, 3, 147-152.

48. Gałkowska H., Dąbrowski M., Olszewski W.L.: Development of antiserum against veiled (dendritic) cells of canine afferent lymph: implications for transplantation biology. Lymphology 1992, 25, 75-83.

49. Gałkowska H., Olszewski W.L.: Immune events in skin. I. Spontaneous cluster formation of dendritic (veiled) cells and lymphocytes from skin lymph. Scand. J. Immunol. 1992, 35, 727-734.

50. Gałkowska H., Olszewski W.L.: Skin allografts - cooperation of dendritic cells and lymphocytes. Immunologia Polska 1992, 17, 195-196 (in Polish).

51. Galkowska H., Olszewski W.L.: Spontaneouse cluster formation of dendritic (veiled) cells and lymphocytes from skin lymph obtained from dogs with chronic lymphedema. Lymphology 1992, 25, 106-113.

52. Gałkowska H., Olszewski W.L.: Skin dendritic cell - lymphocyte interactions in autologous system. In: Progress in Lymphology, XIII. Eds.: R.V. Cluzan, A.P. Pecking, F.M. Lokiec. Excerpta Medica, International Congress Series 994, 1992, 201-203.

53. Gewirtz A.M., Boghosian-Sell L., Catani L., Ratajczak M.Z., Shen Y.M., Schreiber A.D.: Expression of FcgRII and CD4 receptors by normal human megakaryocytes. Exp. Hematol. 1992, 20, 4, 526-527.

54. Goll D.E., Thompson V.F., Taylor R.G., Zalewska T.: Is calpain activity regulated by membranes and autolysis or by calcium and calpastatin? Bioassays 1992, 14, 549-556.

55. Gordon-Majszak W., Gajkowska B.: Biochemical and morphological changes in rat brain synaptosomes after exposure to normobaric hyperoxia in vivo. Exp. Toxicol. Pathol. 1992, 44, 2, 96-101.

56. Greenleaf J.E., Kaciuba-Uściłko H.: Acclimatization to heat in humans. NASA Tech. Briefs, 1992, v. 16.

57. Grieb P.: The perspectives of AIDS therapy. I. Directions for search. Pol. Arch. Med. Wewn. 1992, 87, 306-315 (in Polish).

58. Grieb P.: The perspectives of AIDS therapy. II. AZT and similar compounds. Practical conclusions. Pol. Arch. Med. Wewn. 1992, 87, 316-323 (in Polish).

59. Grochowski W.: Assessment of the ability to resume occupational work in lumbar discopathy. Neurol. Neurochir. Pol. 1992, 1, 170-171 (in Polish).

60. Grzelak I., Olszewski W.L., Engeset A., Fodstad O.: Proliferation of tumor cells in human skin lymph. Immunol. Polska 1992, 17, 201-202 (in Polish).

61. Grzelak I., Olszewski W.L., Engeset A., Fodstad O.: The influence of human skin lymph on proliferation of tumor cells. In: Progress in Lymphology, XIII. Eds.: R.V. Cluzan, A.P. Pecking, F.M. Lokiec. Excerpta Medica, International Congress Series 994, 1992, 365-367.

62. Haeffner E.W., Strosznajder J.B.: Metabolism of [^{14}C] arachidonic acid-labeled lipids in quiescent and OAG-stimulated ascites tumor cells. Int. J. Biochem. 1992, 24, 9, 1481-1485.

63. Hausmanowa-Petrusewicz I.: Muscular diseases. PWN. Warsaw, 1992.

64. Hausmanowa-Petrusewicz I.: Role of electromyography in the diagnosis of motor neuron disorders. Neuropatol. Pol. 30, 3-4, 185-195.

65. Hausmanowa-Petrusewicz I.: Muscular diseases. In: Textbook of Internal Medicine. Ed.: W. Orłowski. PZWL., Warsaw, 1992, suppl. 121 (in Polish).

66. Hausmanowa-Petrusewicz I., Badurska B., Ryniewicz B.: Chaos on classification of spinal muscular atrophy. Neuromusc. Disord. 1992, 2, 429.

67. Hausmanowa-Petrusewicz I., Fidziańska A., Badurska B.: Unusual course of nemaline myopathy. Neuromusc. Disord. 1992, 2, 413.

68. Herbaczyńska-Cedro K., Gajkowska B.: Effect of magnesium on myocardial damage induced by epinephrine. Ultrastructural and cytochemical study. Cardioscience 1992, 3, 3, 197-203.

69. Hilgier W., Puka M., Albrecht J.: Characteristics of large neutral amino acid-induced release of preloaded L-glutamine from rat cerebral capillaries in vitro: Effects of ammonia, hepatic encephalopathy and gamma-glutamyl transpeptidase inhibitors. J. Neurosci. Res. 1992, 32, 2, 221-226.

70. Hoffman E.P., Arahata K., Minetti C., Rowland L.P. and Co-authors (Hausmanowa-Petrusewicz I., Fidziańska A.): Dystrophinopathy in isolated cases of myopathy in females. Neurology 1992, 42, 967.

71. Holmäng A., Larsson B-M., Brzezińska Z., Bjorntorp P.: Effects of short-term testosterone exposure on insulin sensitivity of muscles in female rats. Am. J. Physiol. 1992, 262, E851-E855.

72. Houtteville J.P., Tychmanowicz K.: Colloid cyst of the third ventricle. Report of 8 cases operated of from the anterior transcallosan approach.Neurol. Neurochir. Pol. 1992, 1, 110-115 (in Polish).

73. Jakubowska T., Iwańska B., Sobczyk W., Łuczywek E.: Early signs of cognitive function disturbances in children with SSPE in initial stage. Neurol. Neurochir. Pol. 1992, 26, 791-798 (in Polish).

74. Jankowski W., Strosznajder J.:Uptake and subcellular distribution of intraventricularly injected 1-[^{3}H]dolichol in rat brain. Acta Biochimica Polonica 1992, 39, 2, 215-222.

75. Jaskłowska-Englisz M., Gawron W., Olszewski W.L.: The mechanism of accelerated rejection of i.v. transplanted allogeneic lymphocytes by donor specific transfusion-treated rats. Eur. Surg. Res. 1992, 24, S.2, 48.

76. Jaskłowska-Englisz M., Ziółkowska A., Olszewski W.L.: Mechanism of accelerated rejection of allogeneic lymphocytes injected i.v. into DST-treated recipients. Immunologia Polska 1992, 17, 213 (in Polish).

77. Jóźwik A., Hausmanowa-Petrusewicz I.: The parallel and the common K-NN rules for an analysis of EMG in spinal muscular atrophy. EMG Clin. Neurophysiol. 1992, 32, 571.

78. Jurkiewicz J., Czernicki Z., Berdyga J., Uchman G., Matysiak E.: CSF outflow resistance alternations. An experimental studies. Neurol. Neurochir. Pol. 1992, 1, 207-212 (in Polish).

79. Kaciuba-Uściłko H., Kruk B., Szczypaczewska M., Opaszowski B., Stupnicka E., Bicz B., Nazar K.: Metabolism, body temperature and hormonal responses to repeated periods of prolonged cycle-ergometer exercise in men. Eur. J. Appl. Physiol. 1992, 64, 26-31.

80. Kamińska A., Fidziańska A.: Immunofluorescent localization of vimentin and desmin intermediate filaments in regenerating rat skeletal muscle. Basic Appl. Myol. 1992, 2, 27-31.

81. Kapuściński A.: Changes in endogenous prostacyclin in the rat brain during clinical death and after resuscitation. Neuropatol. Pol. 1992, 30, 2, 127-132.

82. Kida E., Barcikowska M.: Ubiquitin expression in global tangles in the locus coeruleus in brains of patients with Alzheimer's disease. Neurosci. Lett. 1992, 136, 59-62.

83. Kida E., Barcikowska M., Michalska T., Joachimowicz E., Siekierzyńska A.: Peripheral nervous system alterations in small cell lung cancer. Clinico-pathological study. Neuropatol. Pol. 1992, 30, 1, 43-56.

84. Kida E., Barcikowska M., Niemczewska M.: Immunohistochemical study of a case with progressive supranuclear palsy without ophthalmoplegia. Acta Neuropathol. 1992, 83, 318-332.

85. Kohl J., Scholz U., Głowicki K., Koller E.A.: Discharge of pulmonary rapidly adapting stretch receptors during HFO ventilation. Resp. Physiol. 1992, 90, 115-124.

86. Kozierski A., Kroh H., Olszewski W.: A case of IV ventricle cysticercosis. Neurol. Neurochir. Pol. 1992, 26, 1, 115-120 (in Polish).

87. Kroh H.: Anaplastic temporal lobe gangliоglioma. Case report. Neuropatol. Pol. 1992, 30, 3-4, 313-321.

88. Kroh H., Taraszewska A., Ruzikowski E., Bidziński J., Mossakowski M.J.: Neuropathological changes in resected temporal lobe of patients with cryptogenic epilepsy. Neuropatol. Pol. 1992, 30, 2, 133-145.

89. Krynicki M., Olszewski W.L.: Sympathectomy diminishes lymphocyte mobilisation under thermal stress. Acta Neurobiol. Exp., 1992, 52. 195.

90. Krzemiński K., Cybulski G., Niewiadomski W., Titow-Stupnicka E., Nazar K., Kaciuba-Uściłko H.: Effects of a short-term strength training on circulatory responses to standard static and dynamic exercises. Biology of Sport. 1992, 9, 2, 45-54.

91. Kubicka U., Olszewski W.L.: Peritoneal cells and their role in peritonitis. Immunologia Polska 1992, 17, 63-83 (in Polish).

92. Kubicka U., Olszewski W.L., Tarnowski W., Bielecki K.: Influence of macrophages on reactivity of human peritoneal lymphocytes. Immunologia Polska 1992, 17, 234-235 (in Polish).

93. Laure-Kamionowska M., Dąmbska M.: Damage of maturing brain in the course of toxoplasmic encephalitis. Neuropatol. Pol.1992, 30, 3-4, 305-312.

94. Liberski P.P., Budka H., Sluga E., Barcikowska M., Kwiecński H.: Tubulovesicular structures in Creutzfeldt-Jakob disease. Acta Neuropathol. 1992, 84, 238-243.

95. .Lipkowski A.W., Carr D.B., Misicka A., Misterek K.: Biological activities of a peptide containing casomorphin-like and substance P antagonist structural characteristics. In: Beta-Casomorphins and Related Peptides. II. Ed. V. Brantl. 1992.

96. Lipkowski A.W., Misicka A., Hruby V.J.: Structure-activity relationship of novel peptide and nenpeptide opioid ligands. Polish J. Pharmacol. Pharm. 1992, 44 (suppl.), 42.

97. Lipkowski A.W., Misterek K.: Bifunctional pharmacophores. Biological activities of the peptide analogue containing both casomorphine-like and substance P antagonist-like active elements. Pol. J. Pharmacol. Pharm. 1992, 44, 25-32.

98. Liu N.F., Małdyk J., Olszewski W.L.: Mesenteric lymph node transplantation in syngeic rats: changes in cellularity and architecture. Lymphology 1992, 25, 139-144.

99. Liu N.F., Olszewski W.L.: Use of tonometry to assess lower extremity lymphedema. Lymphology 1992, 25, 155-158.

100. Luger S.M., Ratajczak M.Z., Abrams J., Stadtmauer E., GewirtzA.M.: In vitro sensitivity of myeloproliferative disorder colony forming units to c-myb and c-kit antisense DNA: A two year cumulative experience. Blood 1992, 80, 10, suppl. 1, 156a.

101. Łazarewicz J.W.: Excitotoxic effects of excitatory amino acid neurotransmitters in brain: role in pathomechanism of ischemic neuronal injury. In: Excitatory Amino Acids. IX Winter Schoolof the Institute of Pharmacology. Pol. Acad. Sci., Mogilany 1992, Ed.: A. Pilc. Institute of Pharmacology, Cracow, 1992, pp. 65-74 (in Polish).

102. Łazarewicz J., Salińska E., Puka M.: Glycine enhances extracellular $^{45}Ca^{2+}$ response to NMDA application investigated with microdialysis of rabbit hippocampus in vivo. Acta Neurobiol. Exp. 1992, 52, 83-91.

103. Łazarewicz J.W., Salińska E., Wróblewski J.T.: NMDA receptor-mediated arachidonic acid release in neurons: role in signal transduction and pathological aspects. In: Neurobiology of Essential Fatty Acids. Eds.: N.G. Bazan, M.G. Murphy, G. Toffano. Plenum Press, New York, London, 1992, pp. 73-89.

104. Łazarewicz J., Salińska E., Wróblewski J.T.: NMDA receptors and ischemia of the brain: possible role in arachidonic acid release. Wiss. Zeischrift der Humboldt-Universitat zu Berlin, R. Medizin, 1992, 41, 55-61.

105. Łuczywek E.: Psychological evaluation of dementia syndromes. In: Progresses of Psychiatry and Neurology. Ed.: J. Kulczycki, Inst. of Psychiatry and Neurology, Warszawa, 1992, 2, 79-84 (in Polish).

106. Łuczywek E., Fersten E.: Level of verbal fluency in patients different kinds of brain damages. Studia Psychol. 1992, 30, 1, 89-98 (in Polish).

107. Łuczywek E., Jakubowska J.: Difficulties in communication. In:Foundations of Neurology for Family Doctors. Ed.: J. Kulczycki, Inst. of Psychiatry i Neurology, Warszawa 1992, Part II, 37-54.

108. Łukomska B., Stańczuk K., Durlik M., Małdyk J., Olszewski W.L.: Repopulation of bone marrow cavities and lymphoid organs in irradiated rats from syngeneic hind limb graft. In: Progress in Lymphology, XIII. Eds.: R.V. Cluzan, A.P. Pecking, F.M. Lokiec. Excerpta Medica, International Congress Series 994, 1992, 215-220.

109. Maksymowicz M., Olszewski W.L.: Cyclosporin A inhibits in vivo migration of lymphocytes. In: Progress in Lymphology, XIII. Eds.: R.V. Cluzan, A.P. Pecking, F.M. Lokiec. Excerpta Medica, International Congress Series 994, 1992, 211-213.

110. Matyja E., Kida E.: Hippocampal damage in vitro after different periods of oxygen deprivation. Neuropatol. Pol. 1992, 30, 3-4, 229-241.

111. Matyja E., Kuchna I., Ząbek M.: Cerebral ganglioglioma with long history and unusual prominence of the mesenchymal elements. Case report. Neuropatol. Pol. 1992, 30, 2, 165-171.

112. Mempel E., Purska-Rowińska E., Tarnecki R.: Brain mapping in Parkinsonian patients treated by cryothalamotomy. Neurol.Neurochir. Pol. 1992, 1, 192-199 (in Polish).

113. Mempel E., Tarnecki R., Walerian P., Rurska-Rowińska E., Horsztyński D.: Brain mapping in epileptic atomic seizures with disturbances of consciousness at school age. Neurol. Neurochir. Pol. 1992, 1, 185-191 (in Polish).

114. Misicka A., Lipkowski A.W., Horvat R., Davis P., Kramer T.H., Yamamura H.I., Hruby V.J.: Topographical requirements for delta opioid ligands: Common structural features of dermenkephalin and deltorphin. Life Sci. 1992, 51, 1025-1032.

115. Misicka A., Lipkowski A.W., Nikiforovich G.V., Kazmierski W., Knapp R.J., Yamamura H.I., Hruby V.J.: Computer modeling of opioid selective ligands: Possible new topographical relationships to bioactivity are examined with new analogs designed for the delta opioid receptor. In: Peptides. Chemistry and Biology. Eds.: J.A. Smith, J.E. Rivier. ESCOM, Leiden 1992, pp. 140-141.

116. Misicka A., Nikiforowich G., Lipkowski A.W., Horvat R., Davis P., Kramer T.H., Yamamura H.I., Hruby V.J.: Topographical requirements for delta opioid ligands: The synthesis and biological properties of cyclic analog of deltorphin I. Bioorg. Med. Chem. Lett. 1992, 2, 6, 547-552.

117. Misterek K., Maszczyńska I., Dorociak A., Gumulka S.W., Carr D.B., Szyfelbein S.K., Lipkowski A.W.: Spinal interaction between substance P and opioid systems. Polish J. Pharmacol. Pharm. 1992, 44(suppl.), 184.

118. Mossakowski M.J., Zelman I.B.: Dymanics of late neuronal changes in global cerebral ischemia. In: Maturation Phenomenon in Cerebral Ischemia. Eds.: U. Ito, T. Kirino, T. Kuroiwa, I. Klatzo. Springer-Verlag, Berlin, Heidelberg, 1992.

119. Muzylak M., Maślińska D.: Neurotoxic effect of vincristine on ultrastructure of hypothalamus in rabbits. Folia Histochem. et Cytobiol., 1992, 31, 113-118.

120. Namysłowski A., Olszewski W.L.: Mechanism of immune enhancement in allografts - distribution of alloantigen and alloserum in graft recipient. Immunologia Polska 1992, 17, 257-258 (in Polish).

121. Nazar K.: Physical activity and type II Diabetes Mellitus. In: Diabetes Mellitus 1991. Ed.: Cz. Wójcikowski. Gdańsk Medical School, 1992, p. 72 (in Polish).

122. Nazar K., Dobrzyński B., Lewicka R.: Relationship between plasma ammonia and blood lactate concentrations after maximal treadmill exercise in circumpubertal girls and boys. Eur. J. Appl. Physiol. 1992, 65, 246-250.

123. Nazar K., Greenleaf J.E., Philpott D., Pohoska E., Olsyewska K., Kaciuba-Uścilko H.: Muscle ultrastructural changes from exhaustive exercise performed after prolonged restricted activity and retraining in dogs. Aviat. Space Environ. Med. 1992, 63, 306-313.

124. Nazar K., Greenleaf J.E., Pohoska E., Turlejska E., Kaciuba-Uścilko H., Kozłowski S.: Exercise performance, core temperature, and metabolism after prolonged restricted activity and retraining in dogs. Aviat. Space Environ. Med. 1992, 63, 684-688.

125. Niebrój-Dobosz I.: Fluorescent probe analysis of muscle plasmalemma in Duchenne's progressive muscular dystrophy. J. Neurol.1992, 239, 267-269.

126. Niebrój-Dobosz I., Mariam A.G., Łukasiuk M., Rafałowska J.:Blood-cerebrospinal fluid barrier integrity in cerebral infarction. Neuropatol. Pol. 1992, 30, 1, 29-33.

127. Niebrój-Dobosz I., Rafałowska J., Łukasiuk M., Wiśniewska W., Dziewulska D.: Influence of aging on the protein profile of myelin isolated from human brain white matter. Neuropatol. Pol. 1992, 30, 2, 147-154.

128. Olszewski W.L.: Pharmacological and biological methods of prolongation of allografts survival in clinical and experimental practice. Immunologia Polska 1992, 17, 158 (in Polish).

129. Olszewski W.L.: Editorial. What is lymphology in 1991? Lymphology 1992, 25, 50-54.

130. Olszewski W.L.: Presidental lecture - What is lymphology in 1991. In: Progress in Lymphology, XIII. Ed.: R.V. Cluzan, A.P. Pecking, F.M. Lokiec. Excerpta Medica, International Congress Series 994, 1992, 3-8.

131. Olszewski W.L.: Durowicz S.: Cybulska E.: Selective margination of lymphocyte subsets in liver sinusoids. In: Progress in Lymphology, XIII. Eds.: R.V. Cluzan, A.P. Pecking, F.M. Lokiec. Excerpta Medica, International Congress Series 994, 1992, 209-210.

132. Olszewski W.L., Durowicz S., Gawron W., Cybulska E.: Antitumor NK cell marginate in liver sinusoids. Eur. Surg. Res. 1992, 24, S.2. 113.

133. Olszewski W.L., Engeset A., Grzelak I., Ziółkowska A.: Immune cell traffic in normal and lymphedematous skin in man. In: Progress in Lymphology, XIII. Eds.: R.V. Cluzan, A.P. Pecking F.M. Lokiec. Excerpta Medica. International Congress Series 994, 1992, 131-133.

134. Olszewski W.L., Engeset A., Kubicka U.: Immunocytochemical changes in tissues with lymph stasis. In: Progress in Lymphology, XIII. Eds.: R.V. Cluzan, A.P. Pecking, F.M. Lokiec. Excerpta Medica. International Congress Series 994, 1992, 197-199.

135. Olszewski W.L., Jamal S., Cluzan R.: Report on special session devoted to scientific and clinical activities in lymphology around the world. In: Progress in Lymphology, XIII. Ed.: E.V. Cluzan, A.P. Pecking, F.M. Lokiec. Excerpta Medica, International Congress Series 994, 1992, 701-703.

136. Olszewski W.L., Jamal S., Łukomska B., Kubicka U., Swoboda-Kopeć E., Dworczyński A.: Skin changes in Filaria lymphedema. In: Progress in Lymphology, XIII. Eds.: R.V. Cluzan, A.P. Pecking, F.M. Lokiec. Excerpta Medica. International Congress Series 994, 1992, 193-195.

137. Olszewski W.L., Jamal S., Łukomska B., Manokaran G., Grzelak I.: Immune proteins in peripheral tissue fluid-lymph in patients with filarial lymphedema of the lower limbs. Lymphology 1992, 25, 166-171.

138. Olszewski W.L., Jaskłowska-Englisz M., Adamczyk G.: Mechanism of accelerated rejection of intravenously transplanted allogeneic lymphocytes by donor specific transfusion-treated rats.Transplantation Proceedings 1992, 24, 2998-2999.

139. Olszewski W.L., Łukomska B., Durlik M., Ziembiński A.: Bone marrow in bone versus bone marrow cell suspension transplant.Transplantation Proceedings 1992, 24, 3000-3001.

140. Olszewski W.L., Maksymowicz M.: Cyclosporin A changes in vivo migration pattern of intravenously transplanted recirculating lymphocytes. Transplantation Proceedings 1992, 24, 3002-3003.

141. Olszewski W.L., Ningfei L., Chang T.S.: The effects of local microwave hyperthermia on lymphedematous skin in man. In: Progress in Lymphology, XIII. Eds.: R.V. Cluzan, A.P. Pecking, F.M. Lokiec. Excerpta Medica, International Congress Series 994, 1992, 497-499.

142. Ossowska K., Schulze G., Wolfarth S., Coper H., Kamińska A., Hausmanowa-Petrusewicz I.: Muscle stiffness a continuous EMG activity in old rats. Neuroscience 1992, 5, 1, 167- 175.

143. Pokorski M., Albrecht J.: Kolsicka I., Strosznajder R.: Taurine interaction with the cat carotid body function in vitro. In: Neurobiology and Cell Physiology of Chemoreception. Eds. P.G. Data, H. Acker, S. Lahiri. Plenum Press, London, 1992, 451-455.

144. Pokorski M., Strosznajder R.: PO2-dependence of phospholipase C in the cat carotid body.In: Neurobiology and Cell Physiology of Chemoreception. Eds.: P.G. Data, H. Acker, S. Lahiri. Plenum Press, London, 1992, 201-205.

145. Puka M., Albrecht, Łazarewicz J.W.: Noradrenaline- and glutamate-induced taurine release from bulk isolated adult rat astrocytes. Acta Neurobiol. Exp. 1992, 52, 1, 31-35.

146. Rafałowska J., Dziewulska D., Krajewski S.: The breakdown process of human brain infarction in middle-aged and senile cases. Neuropatol. Pol. 1992, 30, 3-4, 253-259.

147. Rafałowska J., Krajewski S., Dolińska E., Dziewulska D.: Does damage of perivascular astrocytes in multiple sclerosis plaques participate on blood-brain barrier permeability. Neuropatol. Pol. 1992, 30, 1, 73-80.

148. Rap Z., Schoner W., Czernicki Z., Hildebrandt G., Hoffmann O., Mueller W.: Changes of ouabain like factor in the cerebrospinal fluid and during development of cold induced vasogenic brain edema. Clinical Neuropathol. 1992, 11, 4, 190-191.

149. Rap Z., Schoner W., Czernicki Z., Hildebrandt G., Hoffmann O., Mueller H.W.: Experimental brain edema-initiated natriuresis and its correlation with the endogenous digitalis-like factor in cerebrospinal fluid and serum. Acta Endocrinol. 1992, 126, 4, 171.

150. Ratajczak M.Z., Hijiya N., Catani L., DeRiel K., Luger S.M., McGlave P., Gewirtz A.M.: Acute- and chronic-phase chronic myelogenous leukemia colony-forming units are highly sensitive to growth inhibitory effects of c-myb antisense oligodeoxynucleotides. Blood 1992, 79, 8, 1956-1961.

151. Ratajczak M.Z., Kant J.A., Luger S.M., Hijiya N., Zhang J., Zon G., Gewirtz A.M.: In vivo treatment of human leukemia in a scid mouse model with c-myb antisera oligodeoxynucleotides. Blood 1992, 80, 10, suppl. 1, 156a.

152. Ratajczak M.Z., Kant J.A., Luger S.M., Hijiya N., Zhang J., Zon G., Gewirtz A.M.: In vivo treatment of human leukemia in a scid mouse model with c-myb antisera oligodeoxynucleotides. Proc. Natl. Acad. Sci. USA 1992, 89, 1921-1927.

153. Ratajczak M.Z., Kuczyński W.I., Moore J., Ratajczak J., Gewirtz A.M.: A reappraisal of the function of insulin like growth factor-1 (IGF-1) in the regulation of normal human erythropoiesis. Blood 1992, 80, 10, suppl.1, 151a.

154. Ratajczak M.Z., Luger S.M., DeRiel K., Abraham J., Calabretta B., Gewirtz A.M.: Role of the kit protooncogene in normal and malignant human hematopoiesis. Proc. Natl. Acad. Sci. USA, 1992, 89, 1710-1714.

155. Ratajczak M.Z., Luger S.M., Gewirtz A.M.: The c-kit protooncogene in normal and malignant human hematopoiesis. Int. J. Cell Clon. 1992, 10, 205-214.

156. Ratajczak M.Z., Szczylik C.: Endogenous inhibitors of the haematopoietic system. Pol. Tyg. Lek. 1992, 5-6, 115-119 (in Polish).

157. Robak T., Grieb P.: 2-chlorodeoxyadenozyna (2-CDA) - a new antineoplastic and immunosuppressive drug. Acta Hematol. Pol. 1992, 23, 3, 141-148 (in Polish).

158. Romaniuk J.R., Supiński G., DiMarco A.F.: Relationship between parasternal and external intercostal muscle lenghth and load compensatory responses in dogs. J. of. Physiol. 1992, 449, 441-455.

159. Ryba M., Grieb P., Podobińska I., Iwańska K., Pastuszko M., Górski A.: HLA antigens and intracranial aneurysm. Acta Neurochir. (Wien) 1992, 116, 1-5.

160. Ryba M., Jarząbek-Chorzelska M., Chorzelski T., Pastuszko M.: Is vascular angiopathy following aneurysm rupture immunologically mediated? Acta Neurochir. 1992, 117, 34-37.

161. Ryba M., Walski M., Iwańska K., Głowicki K., Pastuszko M.: The possible role of endothelium in prevention of rebleeding in experimental subarachnoid hemorrhage (SAH). Neuropatol. Pol.1992, 3-4, 261-268.

162. Sadowska-Szablisty D., Namysłowski A., Łukomska B., Olszewski W.L.: Liver antitumor natural killer cells home in liver sinusoids. Eur. Surg. Res. 1992, 24, S.2, 59.

163. Sadowska-Szablisty D., Namysłowski A., Łukomska B., Olszewski W.L.: Specific migration of antitumor blood cytotoxic cells to liver. Polski Przegląd Chirurgiczny 1992, 64, 778-787 (in Polish).

164. Sadowska-Szablisty D., Namysłowski A., Olszewski W.L.: Specific migration of antitumor blood cytotoxic cells to liver. Immunologia Polska 1992, 17, 281-282 (in Polish).

165. Samoilov M.O., Semenov D.G., Tulkova E.I., Łazarewicz J.W.: Early postischemic changes of polyphosphoinositides and bound Ca^{2+} content in relation to neuronal activity in brain cortex. Resuscitation, 1992, 23, 33-43.

166. Sen Ch.K., Grucza R., Pekkarinen H., Hanninen O.:Anaerobicpower response to stimulated warm-up procedures for skiers. Biology of Sport 1992, 9, 3, 103-108.

167. Sieradzan K., Vrbova G.: Neonatal rat spinal cord does not provide a favourable environment for grafted embryonic motoneurones. J. Physiol. 1992, 446, 256P.

168. Sitnicka E., Hansson M.: Natural killer (NK) cell activity in human long-term bone marrow cultures (LTBMC): effects of interleukin-2 (IL-2) and granulocyte-macrophage colony-stimulating factor (GM-CSF) on the progenitor cells. Immunology 1992, 76, 292-298.

169. Skórski I., Nieborowska-Skorska M., Ratajczak M.Z., Barletta C., Szczylik C., Lange B., Gewirtz A.M., Calabretta B.: Highly efficient purging of Philadelphia' leukemic cells frombone marrow cells by exposure to BCR-ABL antisense oligodeoxynucleotides combined with mafosfamide. Blood 1992, 80, 10, suppl. 1, 199a.

170. Split W., Janusik J., Alwasiak J., Papierz W., Barcikowska M., Liberski P.P.: Creutzfeldt-Jakob disease with tubulovesicular structures: an ultrastructural study. Neuropatol. Pol. 1992, 30, 3-4, 293-303.

171. Stastny F., Pitha J., Lisy V., Hilgier W., Kaucka I., Albrecht J.: The effect of ammonia and pH on brain gamma-glutamyl transpeptidase in young rats. FEBS Lett. 1992, 300, 3, 247-250.

172. Stępińska G., Czernicki Z., Berdyga J.: Limited usefulnes of cerebral infusion pressure determination in cerebral ischemia diagnosis. Neurol. Neurochir. Pol. 1992, 1, 243-250 (in Polish).

173. Strosznajder J., Samochocki M.: Carbachol-stimulated release of arachidonic acid and eicosamoids from brain cortex synaptoneurosome lipids of adult and aged rats. In: Neurobiology of Essential Fatty Acids. Eds.: N. Bazan et al. Plenum Press, New York, 1992, p. 251-258.

174. Strugalska H.: Advances in diagnostic and medical treatment of myasthenia. Terapia i Leki 1992, 20, 205-215 (in Polish).

175. Szereda-Przestaszewska M., Jakus J., Stransky A., Barani H.: Characteristics of augmented breaths provoked by almitrine bismesylate in cats. Exp. Physiol. 1992, 77, 109-117.

176. Szumańska G., Gadamski R.: Lectin histochemistry and alkaline phosphatase activity in the pia mater vessels of spontaneously hypertensive rats (SHR). Neuropatol. Pol. 1992, 30, 2, 99-110.

177. Takeshita K., Bollekens J.A., Nijiya N., Ratajczak M., Gewirtz A.M., Ruddle F.H.: Homeobox gene Hox 3C is required for erythropoiesis. Blood 1992, 80, 10, suppl. 1, 346a.

178. Taraszewska A., Zelman I.B.: Ultrastructural pattern of brain aging in normal rabbit and in pt mutant. Neuropatol. Pol. 1992, 30, 3-4, 269-281.

179. Tychmanowicz K.: Human venous and lymphatic system. Pol. Tyg. Lek. 1992, 20-21, 435 (in Polish).

180. Tychmanowicz K., Czernicki Z., Berdyga J.: ICP dependent changes of CSF outflow resistance. Acta Neurochir. 1992, 117, 44.

181. Tychmanowicz K., Czernicki Z., Pawłowski G., Stępińska G.: A relationship between CSF resorption resistance and intracranial pressure.Pol. Tyg. Lek. 1992, 14-15, 314-316 (in Polish).

182. Tychmanowicz K., Matysiak E., Pawłowski G.: Changes of visual evoked potentials in experimental occlusion of superior saggital sinus in the cat. Neurol. Neurochir. Pol. 1992, 26, 5, 685-693 (in Polish).

183. Walski M., Celary-Walska R., Borowicz J.: The perivascular fibrotic reaction in rat brain in the late period after experimental clinical death. I. Capillary vessles. J. Hirnforschung 1992, 33, 4-5, 409-418.

184. Waśkiewicz J., Rafałowska U.: Histamine and histidine effects on the transport of dopamine in the rat brain synaptosomes. Bulletin of the Polish Academy of Sciences, Biological Sciences, 1992, 40, 2, 91-96.

185. Waśkiewicz J., Rafałowska U.: Modulation of GABA transport in synaptosomes by histamine. Acta Neurobiol. Exp. 1992, 52, 93-98.

186. Wiśniewski K.E., Gordon-Majszak W., Maśliński S., Heaney-Kieras J.: Altered proteins patterns in brains of neuronal ceroid lipofuscinosis children. Am. J. Med. Genet. 1992, 42, 568-574.

187. Woynarowska B., Wikieł H., Sharma M., Carpenter N., Fleet G.W.J., Bernacki R.J.: Inhibition of human ovarian carcinoma cell- and hexosaminidase- mediated degradation of extracellular matrix by sugar analogs. Anticancer Research 1992, 12, 161-166.

188. Wysmyk U., Oja S.S., Saransaari P., Albrecht J.: Enhanced GABA release in cerebral cortical slices derived from rats with thioacetamide-induced hepatic encephalopathy. Neurochem. Res. 1992, 17, 12, 1187-1190.

189. Ziemba A.W., Nazar K., Kaciuba-Uściłko H., Bicz B., Titow-Stupnicka E.: Thermal effect of glucose in women with normal carbohydrate tolerance: relationships to body mass index, blood insulin, and noradrenaline. Materia Medica Polona 1992, 24, 3-7.

Communications

1. Adamczyk G., Lembowicz K., Walski M., Olszewski W.L.: Vasa vasorum and endothelial cell function in veno-venous grafts. 2nd International Symposium on Endothelium-Derived Vasoactive Factors, Basel, Switzerland, April 22-25, 1992. J. Vasc. Res.1992, 29, pp. 75-76.

2. Albrecht J.: Impaired potassium activation of the rat cerebral capillary Na/K-ATPase after in vivo or in vitro treatment with mercuric chloride. 9th Meeting of the European Society for Neurochemistry, Dublin, Ireland, August 16-21, 1992.Neurochem. Int. 1992, 21 (suppl.), C8, p. 32.

3. Albrecht J., Faff-Michalak L., Hilgier W., Rafałowska U.: Synaptosomal transport and metabolism of glutamate precursors in hyperammonemia. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp. 1992, 52, 3, p. 157.

4. Albrecht J., Pokorski M., Borkowska H., Kolsicka I., Strosznajder R.: Citrate: A specific acidic stimulant of dopamine release in the cat carotid body. 9th Meeting of the European Society of Neurochemistry, Dublin, Ireland, August 16-21, 1992 Neurochem. Int. 1992, 21 (suppl.), D6, p. 22.

5. Barcikowska M.: Ischemic infarction within brains with Alzheimer's. 4th European Meeting of Neuropathology, Berlin, Germany, July 14-19, 1992. Clinical Neuropathology 1992, 11, 4, p. 220.

6. Barcikowska M., Kida E., Liberski P.P.: Reactive microglia and astroglia cells in A4 and PrP amyloid deposits. 25th Danube Symposium for Neurological Sciences, Budapest, Hungary, November 4-7, 1992. Abstracts, p. 64.

7. Barcikowska M., Kida E., Liberski P.P.: Microglia within brains with different forms of cerebral amyloidosis. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp. 1992, 52, 3, p. 130, W2.3.

8. Barcikowska M., Liberski P.P., Brown P., Gajdusek D.C.:Microglial cell as a component of amyloid plaques in Gerstmann-Straussler-Scheinker (GSS) syndrome. 4th European Meeting of Neuropathology, Berlin, Germany, July 14-19, 1992. Clinical Neuropathology 1992, 11, 4, p. 220.

9. Bryła P., Olszewski W.L.: Transcapillary transport of immune cell during hypertension and hyperthermia. 8th International Congress of Immunology, Budapest, Hungary, August 23-28, 1992. Abstracts, p. 287.

10. Bryła P., Olszewski W.L.: Transcapillaty transport of immune cells from blood to afferent and efferent lymph. Congress of the Polish Immunological Society, Solina, Poland, November 3-6, 1992. Immunologia Pol., 1992, 17, 3, pp. 176-177 (in Polish).

11. Bryła P., Olszewski W.L., Karłowicz M.: Immune cell transport in skin and lymph node during venous hypertension and hyperthermia. 27th Congress of the European Society for Surgical Research with the University of Zaragoza, Zaragoza, Spain, May 20-23, 1992. Abstract Book, p. 181, P-145.

12. Budzińska K., Karczewski W.A., Malinowska M: Evoked responses in the respiratory muscles during magnetic stimulation of the brain in baboons. Scientific Educational Conference ERS, Rabka, Poland, January 8, 1992 (in Polish).

13. Caro C.G., Cybulski G., Darrow R.D., Doorly D.J., Dumoulin C.L. Tarnowski M.: Femoral artery distensibility in human athletes and non-athletes: local arterial wavespeed determined by comb-excitation Fourierr velocity-encoded MRI. Queen Mary and Westfield College Meeting, London, U.K., December 17-18, 1992, Abstracts, 85P.

14. Cedro-Ceremużyńska K., Lembowicz B., Pytel B.: Influence of nitric oxide synthase inhibitor upon platelet-endothelial cell reaction. 51st Congress of the Polish Cardiological Society, Gdańsk, Poland, October 2-3, 1992 (in Polish).

15. Czernicki Z.: Pathophysiology of CSF circulation in different types of hydrocephalus. Conference of Polish Neurosurgical Society, Warsaw, Poland, November 14, 1992.

16. Czernicki Z., Stępińska G., Berdyga J., Jurkiewicz J.: Cerebrovascular CO2 response alternations following subarachnoid hemorrhage in cats. Intrakranieller Druck Hirnodem Hirndurchblutung, Lubeck, Germany, October 29-31, 1992.

17. Czerwosz L., Myrcha J.: Selected problems concerning the acquisition of analog biomedical signals - a Computer Program. First International Congress of the Polish Neurosciences Society, Warsaw, Poland, September 20-23, 1992. Acta Neurobiol. Exp. 1992, 53, 2, p. 138.

18. Dąmbska M., Laure-Kamionowska M.: Tha brain gray structures developmental anomalies in realtion to the time of origine. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp.1992, 52, 3, p. 174.

19. Dąmbska M., Maślińska D., Kuchna I.:Morphology of subacute necrotizing encephalopathy depending on age and coincidence of pathological processes in two cases. 4th European Meeting of Neuropathology, Berlin, Germany, July 14-19, 1992. Clin. Neuropathol. 1992, 11, 4, p. 200.

20. Dąmbska M., Maślińska D., Kuchna I., Schmidt-Sidor B.:Morphology of subacute necroziting encephalopathy depending on age and coincidence of pathological processes in two cases. 4th European Meeting of Neuropathology, Berlin, Germany, July 14-19, 1992. Clin. Neuropathol. 1992, 11, p. 4.

21. DiMarco A.F., Romaniuk J.R., Dick T.E., Supiński G.: Expiratory reseting by lung inflation in dogs. 1992 FASEB Meeting, Anaheim, California, USA, April 5-9, 1992.

22. DiMarco A.F., Romaniuk J.R., Supiński G.: Comparison of interosseus internal intercostal and abdominal muscle responses to expiratory threshold loads. American Lung Association, Miami Beach, USA, May 17-20, 1992.

23. Dobrowolski L., Kompanowska-Jezierska E., Sadowski J.: Whole kidney studies confirm prostaglandin inhibition of NaCl transport in rat medulla. 7th European Colloquium on Renal Physiology, Naples, Italy, June 13-16, 1992. Renal Physiol. Biochem. 1992, 15, p. 205.

24. Domańska-Janik K.: Early biochemical markers of the progressive postischemic neuronal degeneration. 9th General Meeting of the European Society of Neurochemistry, Dublin, Ireland, August 16-21, 1992. Neurochem. Int. 1992, 21 (suppl.).

25. Domańska-Janik K., Pylova S.: Regulation of cAMP signaling during brain ischemia. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp. 1992, 3, P9.2.

26. Drac H., Pniewski J., Rafałowska J.: Morphological changes in the peripheral nervous system in the case of congenital malformations of the spinal cord. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992.

27. Drac H., Pniewski J., Rafałowska J.: Morphological changes in the peripheral nervous system in the case of congenital malformations of the spinal cord. 4th European Meeting of Neuropathology, Berlin, Germany, July 14-19, 1992.

28. Durlik M., Łukomska B., Cybulska E., Gawron W., Olszewski W.L.: Reaction of bone marrow to trauma - changes in cell volume and populations. 27th Congress of the European Society for Surgical Research with the University of Zaragoza, Zaragoza, Spain, May 28, 1992. Abstract Book, p. 175, P-139.

29. Durowicz S., Olszewski W.L., Sadowska-Szablisty D., Cybulska E.: Do the mononuclear cells selectively marginate in liver sinusoids? 6th International Symposium on Cells of the Hepatic Sinusoid, Antwerp, Belgium, August 23-27, 1992. Abstracts, p. 35.

30. Durowicz S., Sadowska-Szablisty D., Cybulska E., Olszewski W.L.: Selective trapping of lymphocytes in liver sinusoids. 7th Congress of Polish Immunological Society, Solina, Poland, November 3-6, 1992. Immunologia Polska, 1992, 17, pp. 191-192.

31. Emeryk B., Rowińska K., Michalska T., Strugalska H.: SFEMG at different firing rates in myasthenia with and without thymoma. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992.

32. Faff-Michalak L., Albrecht J.: Responses of synaptic and nonsynaptic mitochondrial enzymes involved in neurotransmitter glutamate (GLU) syntesis to hyperamonemia. 9th General Meeting of the European Society for Neurochemistry, Dublin, Ireland, August 16-21, 1992. Neurochem. Int. 1992, 21 (suppl.), B7, p. 25.

33. Faff-Michalak L., Reichenbach A., Dettmer D., Albrecht J: K^+, NH^+_4 , and hypoosmolarity-induced taurine (TAU) release from rabbit Mtller cells cultured in vitro: imperfect correlation with cell volume changes. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp. 1992, 52, 3, p. 181.

34. Fidziańska A., Kamińska A.: Muscle cell apoptosis in pre- and postnatal life. 4th European Meeting of Neuropathology, Berlin, Germany, July 14-19, 1992.

35. Francesangeli E., Domańska-Janik K., Goracci G.: Effect of ischemia and recovery on the synthesis of platelet activating factor (PAF) in brain. Congress of the Italian Biochemical Society, Perugia, Italy, 1992. Italian Biochemical Society Transactions (IBST) 1992, 3, p. 279.

36. Gadamski R., Kroh H.: Immunoreactivity of astroglia in the early and late postischemic periods in Mongolian gerbils. Polish Association of Neuropathologists Scientific Meeting: Experimental and Clinical Studies on Brain Ischemia. Warsaw, Poland, April 25, 1992 (in Polish).

37. Gajkowska B.: Localization of neuropeptides in hypothalamo-hypophyseal system of the rat after ischemia. Scientific Meeting of the Polish Association of Neuropathologists: "Experimental and Clinical Studies of Brain Ischemia", Warsaw, Poland, April 25, 1992 (in Polish).

38. Gajkowska B., Mossakowski M.J.: Immunogold electron microscopic localization of GABA and glutamate-like immunoreactivity in Mongolian gerbils hippocampus after ischemia. 4th European Meeting of Neuropathology, Berlin, Germany, July 14-19, 1992. Clin. Neuropathol. 1992. 11, 4, p. 184.

39. Gałkowska H., Olszewski W.L.: Skin transplantation - cooperation of dendritic cells with lymphocytes. 7th Congress of Polish Immunological Society, Solina, Poland, November 3-6, 1992. Immunologia Polska, 1992, 17, 3, pp. 195-196 (in Polish).

40. Gałkowska H., Olszewski W.L.: Skin dendritic cell-lymphocyte interactions in autologous system. 2nd International Symposium on Dendritic Cells in Fundamental and Clinical Immunology, Amsterdam, Netherlands, June 21-25, 1992. Abstracts, p. 53.

41. Gołębiowski M., Barcikowska M., Łuczywek E.: Alzheimer's disease: measuring the atrophic hippocampus with CT imaging. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp. 1992, 52, 3, 139.

42. Góra-Tybor J., Robak T., Warzocha K., Grieb P.: The influence of 2-CDA allone in combination with cyclophosphamide or methotrezate on murine leukemia L1210. Symposium on Antileukemic and Immunosuppresive Properties of 2-Chloro-2'-Deoxyadenosine (2-CDA). Warsaw, Poland, November 23, 1992.

43. Grieb P.: Discovery, mechanism and expected clinical significance of selective cytoxicity of 2-CDA. Symposium on Antileukemic and Immunosuppresive Properties of 2-chloro-2'-Deoxyadenosine (2-CDA), Warsaw, Poland, November 23, 1992.

44. Grieb P.: Neuropeptides in lungs. Scientific Educational Conference ERS, Rabka, Poland, January 8, 1992 (in Polish).

45. Grieb P., Ryba M., Janczewski W., Sawicki J., Jagielski J., Andrychowski J.: 2-CDA combined with cyclosporine A succesfully prevents rejection of fetal brain stem allograft rabbits. Symposium on Antileukemic and Immunosuppresive Properties of 2-Chloro-2'-Deoxyadenosine (2-CDA). Warsaw, Poland, November 23, 1992.

46. Grieb P., Ryba M., Węgier-Filipiuk B., Górski T., Konopka L.: Impaired in vitro response of human lymphocytes to mitogens following treatment with low doses of 2-CDA. Symposium on Antileukemic and Immunosuppresive Properties of 2-Chloro-2'-Deoxyadenosine (2-CDA). Warsaw, Poland, November 23, 1992.

47. Grzelak I., Olszewski W.L., Engeset A., Fodstad O.: Tumor cell proliferation on the presence of human skin lymph. 8th International Congress of Immunology, Budapest, Hungary, August 23-28, 1992. Abstracts, p. 672.

48. Grzelak I., Olszewski W.L., Engeset A., Fodstad O.: Tumor cell proliferation in human skin lymph. 7th Congress of Polish Immunological Society, Solina, Poland, November 3-6, 1992. Immunologia Polska, 1992, 17, 3, pp. 201-202.

49. Hanninen O., Grucza R.: Influence of menstrual cycle on thermoregulatory responses to exercise and to cold environment. International Symposium on Themperature Regulation, Kostamus, Russia, October 27-28, 1992.

50. Hausmanowa-Petrusewicz I.: The role electromyography in the diagnosis of motor neuron disorders. International Congress of Electromyography and Clinical Neurophysiology, Jerusalem, Israel, June 8-12, 1992.

51. Hausmanowa-Petrusewicz I., Jabłońska S., Błaszczyk M., Drac H., Rowińska K., Emeryk B., Ryniewicz B., Kopeć A., Szmidt E., Raszewa M., Zakrzewska B., Karwańska A.: Neuromuscular involvement in various subsets of scleroderma as related to immune markers. 11th International Meeting on Neuromuscular Diseases, Marseille, France, September 1992.

52. Hausmanowa-Petrusewicz I., Zaremba J., Fidziańska A., Zimowski J., Badurska B., Fidziańska E., Łusakowska A., Borkowska J.: Interrelationship between gene, its product and phenotype in DMD/BMD. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992.

53. Hilgier W., Olson J.E.: Brain edema in hepatic encephalopaty (HE) and hyperammonemia. Annual Meeting of the Society for Neuroscience, Anaheim, CA, USA, October 25-30, 1992. Neuroscience1992, 18, p. 1600.

54. Horan P.J., Matina A., Bilsky E.J., Misicka A., Hruby V.J., Lipkowski A.W., Porreca F.: Antinociceptive profile and physical dependence liability of biphalin, a dimeric enkephalin analog.1992 FASEB Meeting, Anaheim, California, USA, April 5-9, 1992. FASEB J. 1992, 6, A996.

55. Horan P.J., Misicka A., Lipkowski A.W., Hruby V.J., Porreca F.:Mechanism of the ultra-potent antinociception of intracerebroventricular etorphine and biphalin in the mouse. International Narcotic Research Conference, Keyston, USA, June 1992. Abstracts, p. 131, 065.

56. Hruby V.J., Russel K.C., Nicolas E., Jiao D., Fang S., Misicka A., Lipkowski A.W., Kazimierski W., Nikiforovich G., Sharma S., Colins N.: Synthetic, spectroscopic and computational considerations for topographically designed amino acid and peptides. 3rd Naples Workshop on Bioactive Peptides, Capri, Italy, 1992. Abstracts, p. 15.

57. Jabłońska L., Rafałowska U.: Lead action on synaptosomes neurotransmissions in vivo and in vitro. 9th General Meeting of the European Society for Neurochemistry, Dublin, Ireland, August 16-21, 1992. Neurochem. Int. 1992, 21 (suppl.), p. 31, B8.

58. Jabłońska L., Rafałowska U.: Differences in action of lead and uptake and release of GABA, dopamine, histamine and histidine in rat brain synaptosome. First International Congress of the Polish Neurosciences Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp. 1992, 52, 3, p. 148, P5.14.

59. Jabłońska L., Walski M., Rafałowska U.: Cerebral capillaries and lead intoxication. First International Congress of the Polish Neurosciences Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp. 1992, 52, 3, p. 185, P9.6.

60. Janczewski W.: Reflex response to negative pressure within the larynx may quit an episode of an obstructive sleep apnea. Scienfitic Educational Conference ERS, Rabka, Poland, January 8, 1992 (in Polish).

61. Janczewski W.: Reduced upper airway muscle tone diminishes the magnitude of the reflex responses to negative pressure applied to the upper airway. ERS Meeting, Vienna, Austria, August 29 - September 3, 1992. Europ. Resp. J. 1992, vol. 5, suppl. 15, p. 24, 0078.

62. Jaskłowska-Englisz M., Gawron W., Olszewski W.L.: The mechanism of accelerated rejection of i.v. transplanted allogeneic lymphocytes by donor specific transfusion-treated rats. 27th Congress of the European Society for Surgical Research with the University of Zaragoza, Zaragoza, Spain, May 20-23, 1992. Eur.Surg. Res., 1992, 24, S.2., p. 48.

63. Jaskłowska-Englisz M., Gawron W., Olszewski W.L.: Humoral mechanism of rejection of i.v. transplanted allogeneic lymphocytes by donor specific transfusion-treated rats. 8th International Congress of Immunology, Budapest, Hungary, August 23-28, 1992. Abstracts, p. 540.

64. Jaskłowska-Englisz M., Ziółkowska A., Olszewski W.L.: Mechanism of accelerated rejection of allogeneic lymphocytes injected i.v. into DST-treated graft recipients. 7th Congress of Polish Immunological Society, Solina, Poland, November 3-6, 1992 Immunologia Polska, 1992, 17, p. 213 (in Polish).

65. Jernajczyk U., Kukwa A.: Contribution of the activity of V, VII, and XII nerve in to the function of the upper airway. Scientific Educational Conference ERS, Rabka, Poland, January 8, 1992 (in Polish).

66. Jurkiewicz J., Hess K., Probst C., Costabile G., Czernicki Z.: Usefulness of somatosensory evoked potentials in diagnosis of normal pressure Hydrocephalus. 43 Jahrestagung der Deutschen Gesellschaft ftr Neurochirurgie. Frankfurt am Mein, Germany, May 10-13, 1992.

67. Jurkiewicz J.: Posttraumatic brain edema. 3rd InternationalSymposium of Neuroanaesthesia, Łódź, Poland, May 15-16, 1992.

68. Kaciuba-Uściłko H., Porta S., Nazar K., Tonderska M., Titow-Stupnicka E., Ziemba A.W., Chwalbińska-Moneta J: Mood state and catecholamine responses to physical exercise in men. 7th International Catecholamine Symposium, Amsterdam, Netherlands, June 22-26, 1992.

69. Kapuściński A.: Effect of clinical death on inositol 1, 4, 5-triphosphate and cyclic GMP in the rat brain. 4th European Meeting of Neuropathology, Berlin, Germany, July 14-19, 1992. Clinical Neuropathology 1992, 11, 3, p. 187.

70. Kapuściński A.: Progress in diagnostics of brain blood supply disorders. Polish Association of Neuropathologists ScientificMeeting: Experimental and Clinical Studies on Brain Ischemia. Warsaw, April 25, 1992 (in Polish).

71. Kapuściński A.: Progress in isotope studies of cerebral blood flow and their significance among other methods of imaging diagnostics. 3rd Scientific Meeting of the Polish Society of Nuclear Medicine, Cieszyn, Poland, September 21-23, 1992 (in Polish).

72. Karwatowska-Prokopczuk E., Beręsewicz A., Cedro-Ceremużyńska K.: Protective role of nitric oxide upon myocardial injury in ischemia/reperfusion. 51st Congress of the Polish Cardiological Society, Gdańsk, Poland, October 2-3, 1992. Abstr. No 142 (in Polish).

73. Karwatowska-Prokopczuk E., Cedro-Ceremużyńska K., Beręsewicz A.: Protective role of nitric oxide in ischemic-reperfused rat heart. International Society of Heart Research, Heidelberg, Germany, September 1992.

74. Kompanowska-Jezierska E., Dobrowolski L., Sadowski J.: dDAVP increases delivery of NaCl to renal medullary interstitium of anesthetized rats. 7th European Colloquium on Renal Physiology, Naples, Italy, June 13-16, 1992. Renal Physiol. Biochem. 1992, 15, p. 187.

75. Konopka L., Górski T., Węgier-Filipiuk B., Grieb P., Ryba M., Pawelski S.: Cytotoxicity of 2-CDA and 2-BDA towards resting and stimulated normal and lymphoma lymphocytes. Symposium on Antileukemic and Immunosuppresive Properties of 2-Chloro-2'-Deoxyadenosine (2-CDA). Warsaw, Poland, November 23, 1992.

76. Konopka L., Górski T., Węgier-Filipiuk B., Grieb P., Ryba M., Pawelski S.: Cytotoxicity of 2-Chloro-2'-deoxyadenosine (2-CDA) towards resting and stimulated normal and lypophoma lymphocytes. 16th International Congress of Hematology, London, U.K., September 1992.

77. Kroh H., Taraszewska A., Rudzikowski E., Bidziński J., Mossakowski M.J.: Neuropathological changes in resected temporal lobe of patients with cryptogenic epilepsy. 4th European Meeting of Neuropathology, Berlin, Germany, July 14-19, 1992. Clinical Neuropathology 1992, 11, 4, p. 228.

78. Krynicki M., Olszewski W.L.: Sympathectomy diminish lymphocyte mobilisation under thermal stress. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp., 1992, 52, 3, p. 195.

79. Kubicka U., Olszewski W.L., Tarnowski W., Bielecki K.: Macrophage control of immune responsiveness of normal human peritoneal lymphocytes. 8th International Congress of Immunology, Budapest, Hungary, August 23-28, 1992. Abstracts, p. 632.

80. Kubicka U., Olszewski W.L., Tarnowski W., Bielecki K.: The influence of macrophages on immune reactivity of human peritoneal lymphocytes. 7th Congress of Polish Immunological Society, Solina, Poland, November 3-6, 1992. Immunologia Polska, 1992, 17, pp. 234-235 (in Polish).

81. Kubicka U., Olszewski W.L., Ziółkowska A., Tarnowski W., Bielecki K.: Identification of peritoneal cells in man. Symposium "Immunological Problems in Surgery, Transplantology and Oncology - Diagnostic and Treatment, Clinical and Experimental Studies", Warsaw, Poland, October 8, 1992 (in Polish).

82. Kuchna I.: Quantitative histological investigation in the hippocampus of neonates with hypoxic-ischemic lesions after perinatal asphyxia. 4th European Meeting of Neuropathology, Berlin, Germany, July 14-19, 1992. Clin. Neuropathol. 1992, 11, 4, p. 188.

83. Kuchna I., Laure-Kamionowska M., Walkiewicz W.: The widespread but silent cerebral mineralization a case report. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp. 1992, 52, 3, p. 176.

84. Kukwa A.: Surgical treatment of OSAS. Symposium organized by the Committee of Clinical Pathology of the Polish Academy of Sciences, Katowice, Poland, November 1992 (in Polish).

85. Kukwa A., Jernajczyk U., Karczewski W., Gromysz H.: Respiratory activity in cranial nerves: animals model obstructive sleep apnea syndrom (OSAS). Symposium organized by the Committee of Clinical Pathology of the Polish Academy of Sciences, Katowice,Poland, November 1992 (in Polish).

86. Liberski P.P., Barcikowska M., Brown P., Gajdusek D.C.: Microglial reaction in subacute spongiform virus encephalopathies: a comparison with Alzheimer's disease. First International Symposium on Neurobiology and Neuroendocrinology of Ageing, Bregenz, Austria, July 19-23, 1992.

87. Lipkowski A.W.: Biochemical Mechanisms of Pain Perception. Symposium Forschung in der Anasthesiologie - Trends und Perspektiven, Regenburg, Germany, 1992.

88. Lipkowski A.W., Langlade A., Osgood P.F., Szyfelbein S.K., Carr D.B.: Morphine-3-glucoronide, silent regulator of morphine actions. 54th Annual Scientific Meeting of College on Problems of Drug Dependence, Keyston, USA, June 1992. Abstracts, p. 115, No 065.

89. Lipkowski A.W., Misicka A, Hruby V.J.: Strukture-activity relationship of novel peptide and nonpeptide opioid ligands. 11th Congress of Polish Pharmacological Society, Gdańsk, Poland, 1992. Polish Journal Pharmacol. Pharm. 1992, 44 (suppl.), p. 42.

90. Lipkowski A.W., Misicka A., Slaninowa J., Horvath R., Yamamura H.I., Hruby V.J.: The synthesis and opioid receptors binding affinities of demophin and deltorphins analogues with dibasic amino acids in position 2. Second Japan Symposium on Peptide Chemistry, Shizuoka, Japan, November 9-13, 1992. Abstr. P-157.

91. Luger S., Ratajczak M., Abrams J., Stadtmauer E., Gewirtz A.: In vitro sensitivity of myeloproliferative disorders colony forming units to C-MYB and C-KIT antisense DNA: a two year cumulative experience. 34th Annual Meeting of the American Society of Heamtology, Anaheim, USA, December 4-8, 1992. Blood 1992, 80, 10, suppl. 1, abstr. No 614.

92. Łazarewicz J.W.: The role of calcium in glutamate-mediated toxicity. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp.1992, 52, 3, p. 157.

93. Łuczywek E., Fersten E., Barcikowska M., Pfeffer A.: The effect of degenerative diseases of the CNS on verbal memory in the elderly. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp. 1992, 52, 3, p. 141, P3.9.

94. Łuczywek E., Fersten E., Barcikowska M., Pfeffer A.: The effect of Alzheimer's disease on the course of higher mental processes. First International Congress of the Neuroscience Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp.1992, 52, 3, p. 140.

95. Łukomska B., Durlik M., Olszewski W.L.: Vascularized bone marrow transplantation. Second Symposium "Surgery Toward 21st Century", Tokio, Japan, March 28, 1992.

96. Łukomska B., Garcia Barcina M., Winnock M., Bioulac-Sage F., Balabaud Ch., Olszwwski W.L.: Phenotype and adherence to liver sinusoidal lining cells of natural killer cells. 8th International Natural Killer Cell Workshop and First Meeting of the Society for Natural Immunity, St. Petersburg Beach, USA, October 4-6, 1992, Abstracts, pp. 276-277.

97. Łukomska B., Olszewski W.L.: Immune changes in patients with lymphedema. 3rd International Symposium of Lymphedema, Buenos Aires, Argentina, June 17-19, 1992.

98. Łukomska B., Olszewski W.L.: Liver natural killer cells. Conference for Liver Research, Asahikawa, Japan, March 31 - April 1, 1992.

99. Maksymowicz M., Olszewski W.L.: Cyclosporin A impairs migration of lymphocytes at the cell level. 27th Congress of the European Society for Surgical Research with the University of Zaragoza, Zaragoza, Spain, May 20-23, 1992. Abstract Book, p. 230, P-189.

100. Markiewicz D., Taraszewska A., Dąmbska M., Kobuszewska-Faryna M.: Morphological evaluation of effect of neoplastic disease and chemiotherapy on the rat central nervous system with transplanted Morris 7777

hepathoma. 12th Scientific Meeting of the Polish Society of Pathologists, Olsztyn, Poland, November 24-25, 1992. Patol. Pol. 1992, 43, 3, p. 127 (in Polish).

101. Maślińska D., Sidor B., Wiśniewski K., Kuchna I.: Immunoreactivity of glial to beta AP/A-4 antibodies in brains of human beings affected by some inherit storage diseases. First International Congress of the Polish Neuroscience Society, Warsaw, September 21-23, 1992. Acta Neurobiol. Exp. 1992, 52, 3, W9.5.

102. Maślińska D., Wagner T.: Beta/A4 immunoreactivity in neurons of peripheral nervous system. 4th European Meeting of Neuropathology, Berlin, Germany, July 14-19, 1992. Clin. Neuropathol. 1992, 11, p. 4.

103. Maślińska D., Wiśniewski K., Wagner T., Czwalińska T., Taraszewska A.: Beta AP/A-4 immureactivity in some organs of children affected by neuronal ceroid lipofuscinoses (NCL). First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp. 1992, 52, 3, W9.3.

104. Mempel E., Tarnecki R., Witkiewicz B., Walerian P., Horsztyński D., Kołodziejak A.: Analysis of an epilepsy case in 21-year old girl with mental degradation in the pictue of brain mapping. Polish League Against Epilepsy - 8th Conference on Epilepsy, Warsaw, Poland, June 24-26, 1992.

105. Misicka A., Lipkowski A.W., Davis P., Kramer T.H., Horvath H.I. Yamamura H.I., Hruby V.J.: Opioid peptide topographical requirements for delta receptor recognition. InternationalNarcotic Research Conference, Keyston, USA, June 1992. Abstracts, p. 157, no 138.

106. Misicka A., Lipkowski A.W., Horvath R.. Davis P., Kramer T.H., Yamamura H.I., Porreca F., Hruby V.J.: Topographical requirements for delta opioid ligands: The synthesis and biological properties of cyclic analogs of deltorphins and dermenkephalin. 22nd European Peptide Symposium, Interlaken, Netherlands, September 1992. Abstr. no P256.

107. Misicka A., Lipkowski A.W., Nikiforovich G.V., Kazimierski W., Knapp R.J., Yamamura H.I., Hruby V.J.: Computer modeling of opioid selective ligands: Possible new topographical relationship to bioacticvity are examined with new analogs designed for the delta opioid receptor. 12th American Peptide Symposium, Boston, USA, June 1992.

108. Misterek K., Maszczyńska I., Dorociak A., Gumulka S.W., Carr D.B., Szyfelbein S.K., Lipkowski A.W.: Spinal interaction between substance P and opioid systems. 11th Congress of Polish Pharmacological Society, Gdańsk, Poland, 1992. Polish J. Pharmacol. Pharm. 1992, 44 (suppl.), p. 184.

109. Misterek K., Maszczyńska I., Dorociak A., Gumulka S.W., Lipkowski A.W.: Antinociceptive effects of biphalin in interaction with substance P antagonist after i.t. administration. 10th Warsaw Pharmacological Days, Warsaw, Poland, April 1992 (in Polish).

110. Mossakowski M.J.: Selected aspects of pathomechanism of ischemic brain disorders. Scientific Meeting of the Polish Association of Neuropathologists: Experimental and Clinical Studies on Brain Ischemia, Warsaw, Poland, April 25, 1992 (in Polish).

111. Mossakowski M.J., Lossinsky A., Pluta R., Wiśniewski H.: Microcirculation abnormalities in global cerebral ischemia due to experimetal cardiac arrest in rats. 4th European Meeting of Neuropathology, Berlin, Germany, July 14-19, 1992. Clinical Neuropathology 1992, 11, 4, p. 190.

112. Muzylak M., Maślińska D.: Apoptosis of pre- and postmitotic cells in rabbits treated with vincristine. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp. 1992, 52, 3, p. 183.

113. Namysłowski A., Olszewski W.L.: Allogeneic lymphocytes with alloantiserum produce enhancement being eliminated in the liver. 8th International Congress of Immunology, Budapest, Hungary, August 23-28, 1992. Abstracts, p. 555.

114. Namysłowski A., Olszewski W.L.: Mechanism of immune "enhancement" in allografts - alloantigen and alloserum distribution in recipient. 7th Congress of Polish Immunological Society, Solina, Poland, November 3-6, 1992. Immunologia Polska, 1992, 17, pp. 257-258.

115. Nazar K., Cybulski G., Niewiadomski W., Stupnicka E.: Plasma noradrenaline and cardiovascular responses to glucose ingestion in obese, hypertensive patients. 7th International Catecholamine Symposium, Amsterdam, Netherlands, June 22-26, 1992.

116. Niewiadomski W.: Computerized system for calculations of some HRV indices. First International Seminary on Biological Signals Processing, Gliwice, Poland, November 16-20, 1992.

117. Niewiadomski W.: Sensitivity and reproducibility of some HRV indices. First International Seminary on Biological Signals Processing, Gliwice, Poland, November 16-20, 1992.

118. Niewiadomski W.: Computerized system for cardiac-respiratory arrhythmia analysis. First International Seminary on Biological Signals Processing, Gliwice, Poland, November 16-20, 1992.

119. Nowicka A., Fersten E., Grabowska A.: Electrophysiological evidence for sex-related in the interhemispheric transmission time. 15th European Conference on Visual Perception, Pisa, Italy, August 30 - September 3, 1992. Perception 1992, 21, suppl. 2, p. 30.

120. Nowicka A., Fersten E., Grabowska A.: Differences on interhemispheric transmission time for verbal and non verbal materials: the VEPs study. 15th Annual Meeting of the European Neuroscience Association, Munich, Germany, September 13-17, 1992. Europ. J. Neurosci. 1995, suppl. 5, abstr. 4253.

121. Nowicka A., Fersten E., Grabowska A.: Interhemispheric transmission time and functional asymetry of the human brain. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp. 1992, 52, 3, p. 162, W5.1.

122. Olszewski W.L.: The formation and immune function of the lymphatic system in man. 3rd International Meeting of Lymphology, Lisbon, Portugal, March 19-21.

123. Olszewski W.L.: Pharmacological and biological methods of prolongation of allografts in clinical and experimental practice. 7th Congress of Polish Immunological Society, Solina, Poland, November 3-6, 1992. Immunologia Polska 1992, 17, p. 158 (in Polish).

124. Olszewski W.L.: Physiopathologic bases of lymphatic microsurgery.First Meeting of the European Federation of Microsurgical Societies, Roma, Italy, September 26-29, 1992. Abstr. No 2.

125. Olszewski W.L.: Ergonometric basis of microsurgery. 23rd Course of Basic Microsurgical Techniques, Warsaw, Poland, June 24-26, 1992.

126. Olszewski W.L.: Microsurgical techniques in experimental and clinical studies. 23rd Course of Basic Microsurgical Techniques, Warsaw, Poland, June 24-26, 1992.

127. Olszewski W.L.: Ergonometric basis of microsurgery. 24th Course of Basic Microsurgical Techniques, Warsaw, Poland, November 25-27, 1992.

128. Olszewski W.L.: Microsurgical techniques in clinical and experimental studies. 24th Course of Basic Microsurgical Techniques, Warsaw, Poland, November 25-27, 1992.

129. Olszewski W.L., Durowicz S., Gawron W., Cybulska E.: Antitumor NK cell marginate in liver sinusoids. 27th Congress of the European Society for Surgical Research with the University of Zaragoza, Zaragoza, Spain, May 20-23, 1992. European Surgical Research 1992, 24, S.2, p. 113.

130. Olszewski W.L., Grzelak I.: Human tumor cell proliferation in tissue fluid enviroment. Second Symposium "Surgery Toward 21st Century", Tokio, Japan, March 28, 1992.

131. Olszewski W.L., Jaskłowska-Englisz M., Gawron W.: The mechanism of accerelated rejection of i.v. transplanted allogeneic lymphocytes by donor specific transfusion treated rats. First International Congress of the Cell Transplant Society, Pittsburgh, USA, May 31 - June 3, 1992. Cell Transplantation 1992, 1, 2/3, p. 207.

132. Olszewski W.L., Łukomska B., Durlik M.: Bone marrow cell suspension grafting. First International Congress of the Cell Transplant Society, Pittsburgh, USA, May 31 - June 3, 1992. Cell Transplantation 1992, 1, 2/3, p. 207.

133. Olszewski W.L., Maksymowicz M.: Cyclosporin A changes the migration pattern of i.v. transplanted recirculating lymphocytes. First International Congress of Cell Transplant Society, Pittsburgh, USA, May 31 - June 3, 1992. Cell Transplantation 1992, 1, 2/3, p. 208.

134. Olszewski W.L., Ziółkowska A., Kubicka U., Sadowska-Szablisty D.: Flow cytomery of cells from the splanchnic region. FACS Users Meeting, Warsaw, Poland, January 24, 1992.

135. Pastuszko M., Ryba M., Bidziński J., Dziewięcki C., Andrychowski J., Bojarski P., Barczewska M.: Cyclosporine A as a new drug prevented neurological deficit in SAH patients. Congress of the Polish Neurosurgical Society, Kraków, Poland, June 20-23, 1992. Abstracts, p. 62.

136. Piotrkiewicz M., Filipiuk M., Hausmanowa-Petrusewicz I.:MU firing characteristic in human dystrophic muscle. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992.

137. Piotrkiewicz M., Filipiuk M., Hausmanowa-Petrusewicz I.: MU firing characteristic in human dystrophic muscle. International Congress of Electromyography and Clinical Neurophysiology, Jerusalem, Israel, June 8-12, 1992.

138. Pluta R., Lossinsky A., Walski M., Wiśniewski H., Mossakowski M.J.: A new cardiac arrest rat model for the study of the injured brain microcirculation. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiological Exp. 1992, 52, 3, p. 171.

139. Pluta R., Lossinsky A., Wiśniewski H., Mossakowski M.J.: Patomorphology of cerebral vessels following cardiac arrest in rat. Polish Association of Neuropathologists Scientific Meeting: Experimental and Clinical Studies on Brain Ischemia. Warsaw, Poland, April 25, 1992 (in Polish).

140. Pokorski M., Albrecht J., Fresko I.: Carrier-mediated efflux of [^{3}H] Dopamine from the cat carotid body. 4th International Conference on Peripheral Dopamine, University of Porto, Portugal, June 18-20, 1992.

141. Pokorski M., Morikawa T., Honda Y.: Respiratory pattern during chemoreflex responses in tetraplegic patients. 2nd International Conference on "Advances in Pulmonary Rehabilitation and Management of Chronic Respiratory Failure: Prevention of hypoxaemia in COPD", Venice, Italy, November 4-7, 1992. Abstract Book, p. 170.

142. Pokorski M., Paulev P-E., Honda Y.: Cardia reflexes and ventilatory responses to isometric muscular exercise in man. ERS Meeting, Vienna, Austria, August 29 - September 3, 1992. Europ. Resp. J. 1992, vol.5, suppl. 15, s. 95, P0290.

143. Puka M., Lehmann A.: Extracellular levels of taurine in the rat hippocampus depend on pH. 9th General Meeting of the European Society for Neurochemistry, Dublin, Ireland, August 16-21, 1992. Neurochem. Int. 1992, 21 (suppl), D16, p. 63.

144. Puka M., Pluta R., Salińska E., Albrecht J., Łazarewicz J.W.: NMDA receptors trigger taurine release in the ischemic brain. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp. 1992, 52, 3, p. 184.

145. Rafałowska J., Dziewulska D., Jamrozik J.: Rare coexistence of congenital spinal cord malformations in adults. 4th European Meeting of Neuropathology, Berlin, Germany, July 14-19, 1992.

146. Rap Z., Schoner W., Czernicki Z., Hildebrandt G., Hoffman O., Mueller H.: Effect of vasogenic brain emeda on the oubain like factor in the cerebrospinal fluid and serum as well as its corelation to sodium alternation. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp. 1992, 52, 3, p. 194.

147. Ratajczak M., Kant J.A., Luger S., Hijiya N., Zhang J., Zon G., Gewirtz A.: In vivo treatment of human leukemia in a scid mouse model with C-MYB antisense oligodeoxynucleotides. 34th Annual Meeting of the American Society of Hematology, Anaheim, USA, December 4-8, 1992. Blood 1992, 80, 10, suppl. 1, abstr. No 615.

148. Ratajczak Z., Kuczyński W., Moore J., Ratajczak J, Gewirtz A.: A reappraisal of the function of insulin like growth factor-1(IGF-1) in the regulation of normal human erythropoiesis. 34th Annual Meeting of the American Society of Hematology, Anaheim, USA, December 4-8, 1992. Blood 1992, 80, 10, suppl. 1, abstr. No 595.

149. Romaniuk J.R., Dick T.E., Supiński G., Kotas P., DiMarco A.F.: Vagally mediated long-term facilitation of expiratory muscle activity in dogs. 1992 FASEB Meeting, Anaheim, California, USA, April 5-9, 1992.

150. Rowińska-Marcińska K.: Complex and repetitive motor neuron unit potentials in myogenic and neurogenic muscle disease. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992.

151. Ryba M., Grieb P., Majewski S., Makieła B., Pastuszko M., Andrychowski J., Bojarski P.: Modulation of lymphocyte - fibroblast interactions by 2-CDA in subarachnoid hemorrhage. Symposium on Antileukemic and Immunosuppresive Properties of 2-Chloro-2'Deoxyadenosine (2-CDA), Warsaw, Poland, November 23, 1992.

152. Ryba M., Majewski S., Grieb P., Pastuszko M., Andrychowski J., Bojarski P.: Lymphocyte - fibroblast interactions in subarachnoid hemorrhage and their modulation by an immunosuppresant 2-CDA. 3rd International Workshop on Cerebrovascular Surgery, Tokyo, Japan, 1992.

153. Sadowska-Szablisty D., Namysłowski A., Łukomska B., Olszewski W.L.: Liver antitumor natural killer cells home in liver sinusoids. 27th Congress of the European Society for Surgical Research with the University of Zaragoza, Zaragoza, Spain, May 20-23, 1992. Europ. Sur. Res. 1992, 24, S.2, p. 59.

154. Sadowska-Szablisty D., Namysłowski A., Łukomska B., Olszewski W.L.: Do adhesion molecules participate in liver NK cells homing? 8th International Congress of Immunology. Budapest, Hungary, August 23-28, 1992. Abstracts, p. 291.

155. Sadowska-Szablisty D., Namysłowski A., Olszewski W.L.: Liver antitumor natural killer cells home in liver sinusoids. 6th International Symposium on Cells of the Hepatic Sinusoid, Antwerp, Belgium, August 23-27, 1992, Abstracts, p. 146.

156. Sadowska-Szablisty D., Namysłowski A., Olszewski W.L.: Specific migration of antitumor cytotoxic blood cells to liver. 7th Congress of Polish Immunological Society, Solina, Poland, November 3-6, 1992. Immunologia Polska 1992, 17, 3, pp. 281-282.

157. Sadowski J.: Measurements of tissue electrical admittance to evaluate salt trasnport in Henle's loops. 7th European Colloquium on Renal Physiology, Naples, Italy, June 13-16, 1992. Renal Physiol. Biochem. 1992, 15, p. 193, abstr. No 114.

158. Sadowski J., Niewiadomski W., Bądzyńska B.: Admittance measurements for estimation of ion content in renal tissue: biophysical basis. 7th European Colloquium on Renal Physiology, Naples, Italy, June 13-16, 1992. Renal Physiol. Biochem. 1992, 15, p. 193, abstr. No 113.

159. Salińska E., Łazarewicz J.W.: Characterization and modulation of calcium ionophores activated by DNMA and non-NMDA-receptor stimulation. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp. 1992, 52, 3, p. 147.

160. Sammon M., Romaniuk J.R., Bruce R.N.: Respiratory reflexes associated with slowly-adapting receptors (SAR's) responding to lung deflation in rats. FASEB Meeting, Anaheim, California, USA, April 5-9, 1992.

161. Samochocki M., Strosznajder J.: Inhibitory effect of serotonin on cholinergic receptor stimulated inositol phosphates formation and arachidonic acid release in rat brain cortex. 21st Annual Meeting of the Federation of European Biochemical Societies, Dublin, Ireland, August 9-14, 1992. Abstracts, Th-122.

162. Samochocki M., Strosznajder J.: Arachidonic acid as a modulatory factor of brain cortex GABAchloride channel receptor function. 9th General Meeting of the European Society for Neurochemistry, Dublin, Ireland, August 16-21, 1992, Neurochem. Int. 1992, 21 (suppl.), B104.

163. Samochocki M., Strosznajder J.: Interaction of arachidonic acid $GABA_A$/ /chloride channel receptor in adult and aged brain cortex synaptic plasma membrane. 4th European Meeting of Neuropathology, Berlin, Germany, July 14-19, 1992. Clinical Neuropathology 1992, 11, p. 4.

164. Samochocki M., Strosznajder J.: Modulatory effect of arachidonic acid on brain cortex GABAACl-receptor complex function. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp. 1992, 52, 3, p. 149, P5.16.

165. Sawicka E.: Cytichemistry of muscle Ca ATPase in muscular dystrophy. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992.

166. Sikora E., Radziszewska E., Kmieć T., Maślińska D.: Diminished formation of transcription factor AP in lymphocytes derived from subjects with neuronal ceroid lipofuscinosis (NCL) and Down syndromes. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp. 1992, 52, 3, W9.4.

167. Skórski T., Nieborowska-Skórska M., Ratajczak M., Barletta C., Szczylik C., Lange B., Gewirtz A., Calabretta B.: Highly efficient purging of Philadelphia leukemic cells from bone marrow cells by exposure to BCR-ABL antisense oligodeoxynucleotides combined with mafosfamide. 34th Annual Meeting of the American Society of Hematology, Anaheim, USA, December 4-8, 1992. Blood 1992, 80, 10, suppl. 1, abstr. No 788.

168. Stasiak M., Ławicka W., Mempel E.: Dog's retention of the Konorski test with auditory location cues is severely impaired following temporal lesions. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp. 1992, 52, 3, p. 188.

169. Stępińska G., Czernicki Z., Berdyga J., Jurkiewicz J: Evaluation of experimental brain stem ischemia using transcranial Doppler. Congress of the Polish Neurosurgical Society, Kraków, Poland, June 20-22, 1992.

170. Stępińska G., Czernicki Z., Jurkiewicz J., Berdyga J.: TCD parameter at different level of ICP. 3rd International Symposium of Neuroanaesthesia, Łódź, Poland, May 15-16, 1992.

171. Strosznajder J., Duran M.: Serotonin mediated arachidonic acid uptake release: role in signal transduction in aged and ischemic brain. 4th European Meeting of Neuropathology, Berlin, Germany, July 14-19, 1992. Clinical Neuropathology1992, 11, 4, p. 193.

172. Strosznajder J., Duran M.: Aging-affected, serotonin-mediated arachidonate turnover in brain. 23rd Annual Meeting of the American Society for Neurochemistry, Houston, USA, March 15-20, 1992. Am. Soc. Neurochem. 1992, 23, 1, p. 29.

173. Strosznajder J., Samochocki M., Duran M.: The transmembrane signaling of serotonin and cholinergic receptors-mediated arachidonate uptake and release in adult and aged brain. 9th General Meeting of the European Society of Neurochemistry, Dublin, Ireland, August 16-21, 1992. Neurochem. Int. 1992, 21 (suppl.).

174. Strosznajder J., Wikieł H., Duran M.: Signal transduction and lipid-derived messengers in brain ischemia. 23rd Annual Meeting of the American Society for Neurochemistry, Houston, USA, March 15-20, 1992. Am. Soc. Neurochem. 1992, 23, 1, p. 99.

175. Sypecka J., Tosic M., Dolivo M., Domańska-Janik K., Matthieu J.M.: Developmental expression in major myelin proteins genese in hypomyelinated pt mutant rabbits. First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992.

176. Szereda-Przestaszewska M., Paulev P-E., Pokorski M.: Hyperventilatory effect of increased CO2 in the laryngeal airway. ERS Meeting, Vienna, Austria, August 29 - September 3, 1992. Europ. Resp. J. 1992, vol. 5, suppl. 15, p. 457, P1512.

177. Szumańska G.: Histochemistry of lectins in rat cerebral vessels after resuscitation from clinical death. Polish Association of Neuropathologists Scientific Meeting: Experimental and Clinical Studies on Brain Ischemia. Warsaw, Poland, April 25, 1992 (in Polish).

178. Szumańska G., Mossakowski M.J.: Localization of vasoactive intestial polypeptide (VIP) and adenyl cyclase (AC) activity in rat brain after global cerebral ischemia. 4th European Meeting of Neuropathology, Berlin, Germany, July 14-19, 1992. Clinical Neuropathology 1992, 11, 4, p. 94.

179. Szumilak B., Wójcik-Ziółkowska E., Gosiewska-Marcinkowska E., Brodzki L., Teresińska A.: Radionuclide angiography Tc-99m-MIBI after myocardial infarct in patients with in silent angina. Congress of the Polish Society of Nuclear Medicine Cieszyn, Poland, September 21, 1992. Problemy Medycyny Nuklearnej 1992, 1, 11 (in Polish)

180. Takeshita K., Bollekens J.A., Hijiya N., Ratajczak M., Gerwitz A.M., Ruddle F.H.: Homeobox gene Hox 3C is required for erythropoiesis. 34th Annual Meeting of the American Society of Hematology, Anaheim, USA, December 4-8, 1992. Blood 1992, 80, 10, suppl. 1, abstr. No 1376.

181. Tosic M., Dolivo M., Domańska-Janik K., Matthieu J.M.: Myelin protein gene expression is impaired in pt mutant rabbits. American Society for Neurochemistry, 23rd Annual Meeting, Huston, USA, March 15-20, 1992. Abstr. No. 215.

182. Tosic M., Dolivo M., Domańska-Janik K., Matthieu J.J.: Expression of myelin protein genes in pt mutant rabbits. Congress of Swiss Society of Experimental Biology, Basel, Switzerland, March 9-10, 1992.

183. Walski M., Borowicz J.: Phagocytizing cells in the hypothalamic neurosecretory nuclei and in the cortex of rat brain after cardiac arrest. 4th European Meeting of Neuropathology, Berlin, Germany, July 14-19, 1992. Clin. Neuropathol. 1992, 11, 4, p. 194.

184. Wolfarth S., Schulze G., Ossowska K., Coper H., Kamińska A., Hausmanowa-Petrusewicz I.: Muscle stiffness and continous electromyographic acticvity in old rats; an animal model of spasticity? First International Congress of the Polish Neuroscience Society, Warsaw, Poland, September 21-23, 1992.

185. Zabłocka B., Domańska-Janik K.: Initial translocation followed by down regulation of protein kinase C in the ischemic gerbil's hippocampus. 9th General Meeting of the European Society of Neurochemistry, Dublin, Ireland, August 16-21, 1992. Neurochem. Int. 1992, 21 (suppl.).

186. Zabłocka B., Domańska-Janik K.: Expression of protein kinase C as an indicator of the stimulation of Ca^{2+} dependent signaling pathway in gerbil's brain ischemia. First International Congress of the Polish Neurosciences Society. Warsaw, Poland, September 21-23, 1992. Acta Neurobiol. Exp. 1992, 53, 3, W7.3.

187. Zakrzewski G., Grieb P., Pokorski M.: Coenzyme Q10 in the pharmacoprophylaxis of hypercholesterolemia. 31st Congress of Polish Internal Medicine Society, Opole, Poland, September 18-20, 1992.

188. Zalewska E., Hausmanowa-Petrusewicz: Coeficient of MUAP complexity - calculation and interpretation of results. International Congress of Electromyography and Clinical Neurophysiology, Jerusalem, Israel, June 8-12, 1992.

189. Zaucha M.J., Ciesielski D., Grieb P., Hellman A.: 2-CDA treatment in a patient with Waldenstroem's macroglobulinemia complicated by severe neurocytopenia. Symposium on Antileukemic and Immunosuppresive Properties of 2-Chloro-2'-Deoxyadenosine (2-CDA), Warsaw, Poland, November 23, 1992.

190. Zelman I., Taraszewska A.: Development of structural injuries of brain floowing cardiac arrest in human. Polish Association of Neuropathologists Scientific Meeting: Experimental and Clinical Studies on Brain Ischemia. Warsaw, Poland, April 25, 1992 (in Polish).

191. Ziemba A.W., Nazar K., Kaciuba-Uściłko H., Szczepanik I., Kruk B., Chwalbińska-Moneta J., Stupnicka E., Bicz B.: Thermogenic effect of phosphate supplementation in obese dieting women. International Obesity Conference "Ephedrine, Xanthines, and Other Thermogenic Drugs to Assist the Dietary Management of Obesity", Geneva, Switzerland, September 24-26, 1992.