Neoplastic changes in the liver of spotted souslik, *Spermophilus suslicus*


Multiple neoplastic changes were found in an eight-year-old male spotted souslik, *Spermophilus suslicus* (Güldenstaedt, 1770) born in an experimental animal breeding unit. They consisted in twofold neoplastic proliferation of two different tissues — vascular and glandular developed from liver cells (hepatocytes). Macroscopically the left liver lobe was three times larger than in the normal picture of this organ. No metastases to other internal organs could be detected.

[Institute of Biology, M. Curie-Sklodowska Univ., Akademicka 19, 20-033 Lublin, Poland. (J.K.); Department of Patological Anatomy, Agricultural College, Al. PKWN 30, 20-612 Lublin, Poland (B.R.)]

1. INTRODUCTION

Neoplastic changes in internal organs of wild mammals are relatively seldom noted. This may result, among other things from the fact that wild animals debilitated by a long lasting disease undergo more easily natural selection. Cases of such diseases are more frequent in animals bred in captivity or laboratory ones (Benirschke, Garner & Jones, 1978; Cohors, Jaffe & Meessen, 1958; Ponomarkov & Mackey, 1976). The rearing conditions, the specific ethology of animals living in cages allows the assumption that they may be predestined (liable) to diseases of various type. Even in the case of less severe pathological changes such as for instance spontaneous artheriosclerosis in some birds and mammals no such changes are noted in wild-living forms, but only in animals bred as stock or wild mammals born in laboratory conditions (Kubik & Ziolo, 1981; Ziolo & Kubik, 1974, 1983).

The reported multiple neoplastic changes in the spotted souslik (*Spermophilus suslicus*), a mammal undergoing hibernation is a particularly rare phenomenon.

2. MATERIAL AND METHOD

The described case of neoplasm concerned an 8-year-old souslik born in laboratory breeding unit. Its survival under natural conditions usually does not exceed

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four years. The animal was a male in good condition. It was not in a state of hibernation and its external features (colour of fur coat and body weight — 230.3 g) did not indicate any major affection. The animal died mainly because of extensive neoplastic changes in the liver. At autopsy a tumour was found which, proliferating from the liver, filled the whole abdominal cavity. In the peritoneal cavity an ill-smelling liquid derived from blood was present.

Material was collected from the enlarged liver lobes and various parts of the tumour for histological examination and fixed in 10 percent formol. Sections were prepared by the paraffin method and stained with haematoxylin-eosin.

3. RESULTS

The macroscopic picture showed a considerable tuberosity brown-red in colour of lobular structure. Because of the great volume of the tumour, the remaining organs in the abdominal cavity were markedly compressed and displaced towards the left side of the body. The left liver lobe was particularly extended reaching a size almost threefold larger than normal (Fig. 1, Plate I). The remaining lobes had a smooth surface, they were only slightly enlarged and of normal colour. No metastases to other internal organs in the body cavity could be detected.

Microscopic analysis of the neoplastic changes revealed that there was in all liver lobes a large number of ectases of blood vessels with simultaneous multiplication of additional capillaries. The progressing proliferation of the latter involved extensive areas of the liver, giving a picture of a spongy structure with distinct atrophy of the liver parenchyma. Within the tumour proliferating into the abdominal cavity the texture of the capillaries frequently took the form of large cavities filled with blood. The endothelium in the cavernous ectases underwent partial or complete atrophy, this favouring multifocal extravasations within the tumour itself and into the abdominal cavity. The vascular changes as a whole may be described as a benign tumour expansion of capillary and cavernous angioma type (angioma capillare et cavernosum) (Fig. 2, Plate I).

Independently of the neoplastic change concerning blood vessels neoplastic proliferation of malignant type was detected in the enlarged and deformed left hepatic lobe with features of cancer derived from liver cells (hepatocarcinoma) (Fig. 3, Plate I). The proliferating tumour cells with low degree of maturity formed distinct rosette foci or additional liver pseudolobules. The cancerous changes were localised solely within the left liver lobe and did not participate in the spread of the tumour growing beyond the liver.

It results from the analyses performed that there was a double tumour proliferation in the liver of the examined souslik, independent of one
another and involving two different tissues: vascular and glandular formed of hepatocytes. The neoplastic changes appeared in animal kept to the age of eight years in breeding conditions differing widely from its natural environment. This no doubt may have had some influence on the pathological changes in the liver connected with age.

REFERENCES


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EXPLANATION OF PLATE I

Fig. 1. Macroscopic picture of neoplastic changes in liver.

Fig. 2. Expansion of tumour of capillary angioma type. Haematoxylin-eosin staining. $\times$ ca. 250

Fig. 3. Tumour proliferation of carcinoma type, derived from hepatocytes. Haematoxylin-eosin staining. $\times$ ca. 250.