

CLINICAL APPLICATION OF FOETAL ECHOCARDIOGRAPHY

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Recent advance of echocardiography has it possible to study cardiac anatomy and circulatory physiology of foetus.

We have studied foetal cardiac structures and physiology by cross-sectional and M-mode echocardiography in 200 fetuses at 32-40 weeks of gestation. Foetuses were reexamined within 2-5 days after birth to provide comparative data for assessment of circulatory changes at birth.

In these echocardiographic studies, we have already experienced three cases with congenital cardiac malformations (DORV, TGA, and VSD). We diagnosed DORV before birth, when two great arteries rising from one single ventricle were observed. But, TGA and VSD were only diagnosed after birth. Therefore, we have concluded that this technique is useful to diagnose malformations of cardiac chambers or correlations between cardiac chambers and two great arteries.

We also examined mitral valve diastolic descent rate (MVDDR), mitral valve excursion (MVE), tricuspid valve diastolic descent rate (TVDDR), tricuspid valve excursion (TVE) and aortic dimension (AOD).

The normal data of foetus are as follows;

	before birth		after birth	
MVDDR	43.1 \pm 12.4	mm	54.3 \pm 7.7	mm
MVE	7.3 \pm 0.9	mm	9.5 \pm 1.1	mm
TVDDR	49.7 \pm 12.8	mm	57.9 \pm 9.1	mm
TVE	8.1 \pm 1.1	mm	11.1 \pm 1.1	mm
AOD	8.8 \pm 0.9	mm	11.5 \pm 1.0	mm

It has long been believed that only one third of total cardiac output eject from left ventricle, but these data above mentioned may suggest more than one third of total cardiac output ejects from left ventricle.

In conclusion, foetal echocardiography may be applicable to diagnose cardiac malformations and also to evaluate cardiac functions before birth.