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Neonatal heart murmur: Is it useful for the diagnosis of congenital heart diseases?

Congenital heart disease (CHD) is one of the commonest congenital malformations, affecting 7-8 per 1000 live births, which are mostly asymptomatic at birth.^[1] The prevalence of cardiac murmur varies from 0.6% to 47.4% and is dependent on sample size, auscultator conditions and skills of the examiner.^[1-3] However, not all neonates with CHD are found to have a murmur at postnatal check, and those with murmurs will not have CHD. Wu et al^[3] reported that if a murmur is heard, there is an incidence of 42.5% for cardiac malformations. In contrast, Du et al^[4] mentioned that heart murmur in 84% of neonates was caused by heart diseases and only 16% were innocent with a diagnosis of heart disease confirmed by echocardiography. Moreover, Karatza et al^[5] found that auscultation alone has a limited ability to distinguish a pathologic from innocent murmur.

We determined the clinical significance of heart murmur heard during the examination of 2869 neonates from April 1, 2012 to April 31, 2013. Each neonate was thoroughly examined by a pediatric resident. If a murmur was detected, it was reconfirmed by a pediatric consultant. All neonates with murmurs underwent echocardiography. The murmurs were detected in 76 neonates, of whom 37 had a cardiac malformation. The incidence of murmur was 26.49 per 1000 normal neonates. Of the 76 neonates with a murmur, 37 had a significant structural heart lesion (SHL), 16 had an insignificant SHL, i.e., physiological variant, and 23 had a normal echocardiographic examination (Table). The incidence of CHD was 12.89 per 1000 during the study period. Although SHL was detected in the 37 neonates, 30 had a single SHL and 7 multiple SHL. Patent

Table. Distribution of various causes of heart murmur in neonates

Results of echocardiography	Number	Percentage, %
Significant cardiac lesions		
Patent ductus arteriosus	12	15.79
Ventricular septal defect	9	11.84
Atrial septal defect	5	6.58
Pulmonary stenosis	4	5.26
Transposition of the great arteries	3	3.95
Tetralogy of Fallot	1	1.32
Transposition of great vessels	1	1.32
Tricuspid atresia	1	1.32
Bicuspid aortic valve	1	1.32
Insignificant cardiac lesions (physiological variants)		
Patent foramen ovale	9	11.84
Tiny patent ductus arteriosus	5	6.58
Mild peripheral pulmonary stenosis	2	2.63
Normal	23	30.26
Total	76	100

ductus arteriosus was the most common SHL (65.63%) followed by ventricular septal defect, atrial septal defect and pulmonary stenosis. We concluded that if a murmur is heard, there is an incidence of 48.68% for cardiac malformation. Therefore, murmur should be promptly detected by echocardiography. Although the presence or absence of heart diseases could be determined in most neonates, the lesion-specific diagnosis is not satisfactory. Echocardiography is necessary for neonates with a clinically diagnosis of heart disease.

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