

Cardiac murmurs detected at newborn examination

Background

Murmurs in the neonatal period have been reported in 0.3 - 77.4% of babies, with prevalence dependent on several factors, including study size, auscultatory conditions and skill of the examiner ^{1,3}. However, not all neonates with congenital heart disease will be found to have a murmur at postnatal check, and not all those with murmurs will have congenital heart disease. Ainsworth *et al* published study of prevalence of murmurs in 1999, finding 54% of otherwise normal babies with murmurs had underlying congenital cardiac disease, with 9% of these babies requiring early cardiac surgery; their calculated sensitivity and specificity for CHD were 44% and 99.7% respectively ¹. However, it should be noted that this study had a lower incidence of murmurs than previous studies and also they made no assessment as to if a murmur was clinically felt to be innocent or pathological.

Arlettaz *et al* performed a controlled echocardiographical study of term babies with murmurs at the newborn check felt to be clinically innocent as assessed by a study team member ². From the study data, all babies with a murmur had a PFO (along with the majority of those without murmurs), 26% had a PDA, 14% had pulmonary branch stenosis (PBS) and 30% had both PDA and PBS. No lesions requiring intervention were identified in their study group of 50, with the majority of murmurs resolving by 6 weeks and all by 6 months.

Hence murmurs in newborns have variable incidence and are associated with underlying cardiac disease. Data also demonstrate murmurs identified by a specialist as innocent clinically can be safely classified as such. Farrer *et al* have studied the ability of SHOs (both GP and paediatric trainees) to differentiate pathology from innocent murmurs ³. In this study, of 112 babies with murmurs, 12 were clinically felt to be organic in nature and 100 innocent. Of the innocent murmurs, at follow up, 10 were found to have abnormal echocardiograms (and 22 lost to follow up). The majority of the lesions found amongst those felt by the juniors to have innocent murmurs were VSDs (6), with the others having either pulmonary stenosis or a PDA. All the VSDs had resolved spontaneously by 6 months of age. These data demonstrated the SHO examination has a sensitivity of 71% and a specificity of 91% to assess the clinical significance of a murmur. The negative predictive value was 91%. Patton and Hey have also demonstrated the ability of suitably trained midwives to pick up heart defects in newborn babies ⁴

Some centres routinely perform chest X-rays and electrocardiograms on neonates found to have murmurs. However the subtle changes in ECGs in clinically well neonates may well be difficult for the non-specialist to discern. A study by Oeppen *et al* has shown that CXRs do not change management in newborns with asymptomatic murmurs⁵. Another investigation utilised in the assessments of newborns with murmurs is the 4-limb blood pressure; a 2004 study by Crossland *et al* ⁸ has shown that differences of 20mmHg between limbs is most commonly due to normal variation, and so the test is of no utility in the detection of coarctation of the aorta.

Guideline for cardiac murmur identified at newborn examination

