ABC of 1 to 7

H B VALMAN

SYSTOLIC MURMURS

Congenital heart disease occurs in about one in every 100 live births but the commonest clinical problem is the child with a murmur discovered during a routine examination or during an acute illness. Most of these children have no cardiac disease.

The minority with physical disease usually have a ventricular septal defect or mild pulmonary stenosis. Most of the ventricular septal defects close spontaneously before the child reaches the age of 5 years.

Loud murmurs are always due to cardiac disease. Soft murmurs may be either caused by cardiac disease or have no pathological significance (benign or innocent murmurs).

Loud systolic murmurs

Ventricular septal defect is the most common congenital heart disease in childhood. It produces a loud murmur maximal in the fourth left intercostal space close to the sternum. Although it is maximal at that site it radiates in all directions and may be heard as high as the clavicle.

Pulmonary stenosis causes a loud systolic murmur maximal in the pulmonary area, which is conducted to the left lung posteriorly.

Aortic stenosis produces a murmur which may be maximal to the right of the upper sternum and to the left of the midsternum and is well conducted to both sides of the neck.

Soft systolic murmurs due to organic disease

Atrial septal defect causes a soft systolic murmur in the pulmonary area due to increased flow of blood through the pulmonary valve. This lesion is often first noted in adult life, when the symptoms appear. In atrial septal defect the second heart sound is widely split and does not vary with respiration. In contrast, in normal children the second heart sound is widely split in inspiration and less in expiration.

Children with coarctation of the aorta often have a short systolic murmur heard over the back between the scapulae. The diagnosis is not missed if the femoral arteries are palpated routinely. Children with coarctation of the aorta often have other lesions, such as aortic stenosis, and the finding of a murmur due to that lesion may bring the coarctation to light.

If the murmur is discovered during a routine examination and the doctor is convinced that it is benign there is no advantage in discussing it with the parents. On the other hand, if there is a doubt about the nature of the murmur the parents must be told that the child has a murmur. If the murmur has been noted on one occasion it is likely to be heard again at routine examinations and whenever the child has fever. If the child is acutely ill with a high fever and the mother is very anxious it may be better to postpone telling her about the murmur until the child has been examined in the convalescent period. If there is a possibility that another doctor will see the child at that time it may be better to discuss it at the first visit and avoid the possibility that it will be forgotten.

When the murmur is being discussed, preferably in the presence of both parents, it should be emphasised that it is a normal sound heard in children with normal hearts; that the noise is probably due to blood flowing through the tubes, and in some cases more noise is produced than in others, similar to the noise in some central heating systems. Doctors initially have to exclude disease but when they have done that the child should be considered completely normal and should be treated as a normal child. Ample opportunity must be given to allow the parents to ask questions to enable them to understand this difficult concept.

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The illustrations of ventricular septal defect and patent ductus arteriosus were adapted, with permission, from *Essential Paediatrics* by David Hull and Derek I Johnstone, published by Churchill Livingstone.

Some useful drugs

Children treated at home and most of those in hospital need oral drugs three times a day. They should be given before meals and the child need not be woken specially for the drug. Some preparations, particularly the penicillins, have an unpleasant taste and the medicine should not be mixed with food as the child may then hate both. Syrup, which is a sucrose solution that forms the base of most elixirs, may cause dental caries if it is given regularly for a long time. The concentration of the drug in the elixir should be high to provide a minimum volume. In difficult 1- to 3-year-olds wrapping the child securely in a blanket may prevent spillage if only one adult is present to give the medicine. If a child will not accept a drug on a spoon the drug can be measured in a disposable syringe (with *no* needle) and squirted on to the child's tongue.

Aminophylline 3-5 mg/kg single intravenous dose given slowly
 Amoxycillin 25 mg/kg/24 h orally
 Ampicillin 50-100 mg/kg/24 h orally, intramuscularly, intravenously
 severe infections 300 mg/kg/24 h intravenously
 Beclomethasone dipropionate Rotacap 100 µg 3 times daily
 Betamethasone 3 mg per dose intramuscularly or intravenously
 Cephalixin 40-100 mg/kg/24 h orally
 Chloral hydrate 30 mg/kg/24 h orally
 Chlorpheniramine 1-2 mg per dose 3 times a day orally, intramuscularly, intravenously
 Cloxacillin 50-100 mg/kg/24 h orally, intramuscularly, intravenously
 Co-trimoxazole 6 mg/kg/24 h (as trimethoprim) orally
 Diazepam 0.1-0.2 mg/kg/24 h orally or slowly intravenously
 Dioctyl sodium sulphosuccinate 12.5 mg per dose 3 times daily orally
 Erythromycin 50 mg/kg/24 h orally
 Flucloxacillin 25-50 mg/kg/24 h orally
 Gentamicin 7 mg/kg/24 h intramuscularly or intravenously
 Hyaluronidase 300 units per dose intramuscularly
 Hydrocortisone 100 mg per dose intramuscularly or intravenously
 Ipecacuanha syrup (USP) 15 ml per dose
 Methylcellulose 9% solution 5 ml per dose 3 times daily orally

Naloxone 0.01-0.02 mg/kg per dose intramuscularly or intravenously (can be repeated after 3 minutes)
 Nitrofurantoin 3 mg/kg single dose daily by mouth as maintenance dose
 Nystatin 100 000 units per dose (four hourly) orally *after* food
 Paracetamol 75 mg/kg/24 h orally
 Paraldehyde 0.2 ml/kg per dose *intramuscularly*
 Penicillin Benzylpenicillin 50 mg/kg/24 h intramuscularly, intravenously
 severe infections 200 mg/kg/24 h intravenously
 Penicillin phenoxymethyl 50 mg/kg/24 h orally
 Phenobarbitone 5 mg/kg/24 h orally or intramuscularly
 Phenytoin 5 mg/kg/24 h orally or intramuscularly
 Promethazine hydrochloride 1 mg/kg per dose orally or intramuscularly
 Salbutamol oral: 1-2 mg per dose 3 times daily
 Rotacap: 200 µg per dose 3 times daily
 respirator solution (for nebuliser): 2.5 mg per dose
 Senna syrup (standardised) 2.5-5 ml per single daily dose orally
 Sodium cromoglycate Spincap 20 mg 3 times daily
 nebuliser solution 20 mg 3 times daily
 Sodium valproate 20-30 mg/kg/24 h orally
 Sulphafurazole 100 mg/kg/24 h orally
 Trimeprazine tartrate 3 mg/kg per dose orally