

Paediatrics is an important aspect of general practice, and paediatric cardiology frequently impinges on the general practitioner. The most common dilemmas encountered circle around murmurs. While many normal children have heart murmurs, very very few actually have any cardiovascular pathology.¹ The usual medical platitude does actually apply, in that children who actually have cardiac disease can be identified by a careful history and examination. The practice of referring all

colour, increased precordial activity, weak or absent femoral pulses, blood pressure, abnormal second heart sounds (fixed splitting or single second sound), clicks and a loud or harsh murmur.

Benign (innocent/functional) murmurs are found in 30% of school aged children. Naturally, few need formal paediatric cardiology assessment. Still's murmur is loudest at the lower left sternal edge, is high pitched and squeaky, and decreases in in-

found in neonates and young infants and is caused by mismatch between the cross-sectional areas of the main pulmonary arteries and the branch pulmonary arteries, which may be overall narrower and cause blood flow acceleration and hence, a murmur. The peripheral pulmonary arteries grow into the existing blood flow and the murmur eventually vanishes.

Paediatric arrhythmias are occasionally encountered in general practice. The commonest is supraventricular tachycardia. This is usually seen as a narrow complex tachycardia on the 12-lead ECG and has a rate in excess of 200/min (figure 1). The mechanism is usually reentry from an accessory pathway which is often concealed (no delta waves visible on an ECG when the patient is in sinus rhythm). During SVT, late P waves are often seen just after the R wave. The accessory pathway may also be manifest, and this is termed Wolff-Parkinson-White syndrome (figure 2) (delta waves are seen in sinus rhythm but disappear during SVT).

This type of tachycardia occurs in one per 250-1000 children. Onset may occur at any time, including in utero. Over 90% of infants with this tachycardia outgrow it by 10 months of age, and are therefore treated with antiarrhythmics until one year of age. However, one third of these will have recurrence between the 5 and 8 years of age. Permanent treatment is by catheter ablation using radio frequency energy.

In practice, in older children who present with palpitations, the most difficult part in diagnosis and treatment is actually

Types and features of functional murmurs

Type	Location in cardiac cycle	Specific feature/s
Venous hum	Systolic and diastolic	Sitting only
Vibratory (Still's) murmur	Midsystolic	Musical quality
Pulmonary ejection	Ejection without a click	Normal second sound
Carotid bruit	Short systolic	Carotid area
Physiologic peripheral pulmonary stenosis	Short systolic, bilateral	Transmitted throughout lung fields, in neonates and young infants

children with murmurs for paediatric cardiology assessment or simply 'for an echo' is to be discouraged. Only patients with organic murmurs and those in whom uncertainty persists after examination should be referred. Functional murmurs should not be referred except for pulmonary ejection murmurs (see table) which may be difficult to distinguish from an atrial septal defect.

In babies, a feeding history is important in order to elicit features of heart failure. Older children may occasionally complain of palpitations, an important point to ask about. A family history of congenital heart disease, sudden death and individuals with features of Marfan syndrome should be sought.

Physical examination should look for syndromic features,

tensity on standing. On the contrary, a venous hum, which is produced by blood flow down the superior vena cava, is louder on standing due to gravity accelerated flow into the heart.

A venous hum is the only benign murmur that is audible in diastole, and it may be reduced in intensity by laying the child down, by light pressure on the right side of the neck to impair jugular venous return and by turning the head. Other murmurs should be referred for formal assessment. In practice, the easiest lesion to miss is an atrial septal defect, therefore practice in listening to the normal variable splitting of the second heart sound is useful.

Peripheral pulmonary stenosis is a short systolic murmur that is heard over the chest and over both sides of the back. It is

catching the arrhythmia, if any. Patients and parents should be taught how to count the pulse, at the wrist (radial artery), cubital fossa (brachial artery), neck (internal carotid artery) and to actually palpate the precordium. Fast tachycardia in excess of 180-200 /min is very difficult to count, which is a helpful indicator with regard to true pathology. An ECG during the tachycardia is extremely helpful, and event recorders are very useful in this regard.

REFERENCE

1. McConnell ME, Adkins SB 3rd, Hannon DW. Heart murmurs in pediatric patients: when do you refer? *Am Fam Physician* 1999;60:558-565

ACKNOWLEDGMENT

Dr. O. Aquilina, Consultant Cardiologist, St. Luke's Hospital, for reviewing the arrhythmia section.

Editor's Note:

Dr. Grech has supplied audio files of the different murmurs referred to in his article. Please e-mail me at jksoler@synapse.net.mt for a copy of these files.

Figure 1: Narrow complex tachycardia (200/min) of supraventricular origin

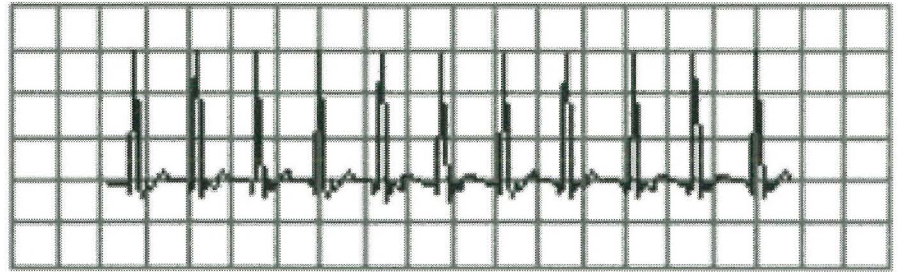


Figure 2: Wolff-Parkinson-White syndrome – short PR interval, slurred upstroke of QRS

