Heart Murmurs in Childhood

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Aims

• Identify infants and children with heart disease
• When there is no heart disease, reassure families that the child’s heart is normal
Incidence of Murmurs in Childhood

- > 50% of children have a systolic murmur
- >15% have a systolic murmur ≥ 2/6 intensity
- most do not have congenital heart disease
- most do not need further investigation
Young infants (<12 months of age)

- A heart murmur is more likely to be associated with congenital heart disease compared to older children

Features of congestive heart failure
- poor feeding and poor weight gain
- tachypnoea
- hepatomegaly

Cardiovascular examination
- loud murmur
- loud second heart sound
- abnormal brachial and/or femoral pulses
18 months - 3 years

- difficult to examine and investigate
**18 months - 3 years**

- new murmurs are unlikely to be related to important congenital heart disease
- a delay in diagnosis of an atrial septal defect or minor aortic or pulmonary valve anomalies is rarely of any consequence
- most can wait until 4-5 years of age for a further assessment
**Older children**

- most murmurs are innocent
- atrial septal defects commonly diagnosed after 3 years of age

**Image:**
- Hyperdynamic precordium
- Widely split second sound
- Systolic flow murmur
Characteristics of innocent murmurs in older children

- healthy child
- no signs of heart failure or cyanosis
- normal precordium
- murmur intensity varies with posture, increases with fever
- normal second heart sound

Pathological murmurs are almost never intermittent
Vibratory murmur

• Still’s murmur
  “a twanging sound, very like that made by twanging a piece of tense string” George F Still 1909

• aortic leaflet vibration

  almost disappears with sitting
Venous hum

- continuous murmur
- accentuated in diastole

- varies with posture, head movement
How do you KNOW??

- “New auditory training programme”
  - Halifax, Canada
  - 20 nonmedical students
  - 120 senior medical students
- Pre test
  - 20 random heart murmur recordings
- One hour auditory training
  - increasing “difficulty” with requirement for 6 consecutively correct answers before proceeding to the next level
• Post test
  – Immediately after training and again 2 months later
• Control group – 42 medical students
  – No training between the pre test and the 2 month post test
• Teaches students to distinguish innocent and pathological murmurs with 90% accuracy
• Medical training not necessary
• *Reinforcement teaching will probably be necessary*
How can you learn

• Variety of web based demonstrations

http://depts.washington.edu/physdx/heart/demo.html
Echocardiography

• Diagnostic imaging technique of choice

But….

• physical examination by an experienced examiner is a very effective screening technique; specialist referral more cost-effective strategy than direct referral for echocardiography

• “false positive” heart disease (PFO, trivial mitral regurgitation etc)

• frequent need for sedation in infants
Primary care referrals with murmurs in Auckland

- 191 patients

- Uncertain Diagnosis: 12%
- Major Congenital Heart Disease: 4%
- Minor Congenital Heart Disease: 7%
- Innocent Murmur: 77%
Major Congenital Heart Disease

- 7 of 191 (4%) patients
Older children

- Innocent murmurs
  - history
    - exclude exercise intolerance
    - recurrent respiratory tract infections
  - examination
    - exclude tachypnoea
    - no cyanosis
    - normal cardiac impulse
    - no palpable thrill
    - normal brachial and femoral pulses
Summary

- Heart murmurs are common, significant congenital heart disease is not.

- Consider referral to paediatrician or cardiologist if:
  - Associated features on history or examination
  - Young infant
  - Unusual murmur
  - There is a high level of anxiety within the family