Innocent Murmurs

What is an innocent murmur?

- Murmurs that are due to normal slow turbulence and vibration, not structural abnormality
- Very common
- More than 80% of children have innocent murmurs of one type or another sometime in childhood
- Normal EKG, normal CXR

How should an innocent murmur sound?

- Systolic (most) vs. continuous
- Grade III/VI or less
- Louder in supine position - stroke volume increases
- Louder with exercise, anxiety, anemia, or fever - again, accentuated in a high output state
- Softer or disappear with Valsalva

** Bonus: If murmur becomes louder with Valsalva, what should you be thinking about? **

Still's Murmur

- Systolic ejection murmur with musical/vibratory quality
- Thought to be generated by low-frequency vibrations of the normal pulmonary leaflets at their attachments during systole OR periodic vibrations of the left ventricular false tendon
- Maximal at the MLSB or LLSB/apex
- VERY COMMON, 3-6 year olds

Pulmonary Ejection Murmur

- Blowing in quality, maximal at the ULSB, early to mid-systolic
- Represents an exaggeration of normal ejection vibrations within the pulmonary trunk
- Age 8-14 yr commonly, mainly in adolescents

Pulmonary Flow Murmur of Newborn

- Also known as physiologic peripheral pulmonic stenosis (PPPS)
- Audible at ULSB, transmits to the right and left chest, axillae, and back
- Represents turbulence and flow in the small pulmonary arteries coming off the main pulmonary trunk; this is due to the relative hypoplastic nature of the RPA and LPA immediately after birth
- Present in newborns, especially LBW
- Suspect PA stenosis if the murmur does not disappear by 3-6 months (Medstudy says up to 1 year)

Venous Hum

- Continuous. Diastolic component louder. Maximally audible at the right and/or left infraclavicular/supraclavicular areas. Turbulence in the jugular venous system
- Heard in upright position, disappears when supine
- **Distinguish from continuous murmur like PDA** - PDA is loudest at ULSB or left infraclavicular areas, associated with bounding pulses and wide pulse pressure if shunt is large. Systolic component louder. Abnormalities on EKG or CXR can be see

Carotid Bruit (Supraclavicular Systolic Murmur)

- Early systolic ejection murmur best heard in the supraclavicular fossa or over carotid arteries. Turbulence in the brachiocephalic or carotid arteries
- Very short and early, ends before the 1st third of systole
- Can be found in any age

So when should we suspect that a murmur is <u>not</u> so innocent?

- Concerning symptoms - poor weight gain, difficulty feeding, sweating during feeds, respiratory symptoms
- Abnormal cardiac size or silhouette or abnormal pulmonary vascularity on CXR
- Abnormal EKG
- Diastolic murmur
- Systolic murmur that is loud (more than III/VI or with a thrill), long in duration, and transmitting well to other parts of the body
- Cyanosis
- Abnormally strong or weak pulses
- Abnormal heart sounds (e.g. S4, loud S3, click, etc)

References and Further Reading

Pediatric Cardiology for Practitioners by Dr. Myung Park

Heart murmurs audio files:
Heart Murmurs: Supplemental by Menashe V. Pediatrics in Review, Apr 2007. Vol 28, Iss 4.
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Not so innocent murmurs:
Congenital Heart Disease by Puri K, Allen HD, Qureshi AM. Pediatrics In Review, Oct 2017. Vol 38, Iss 10.
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