Paediatric Myocarditis

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Next review	

PAEDIATRIC MYOCARDITIS GUIDELINES

ON ADMISSION/A&E

Consider myocarditis in any child with history/clinical signs of:

- Unexplained tachycardia or tachycardia out of proportion to clinical context
- Any type of arrhythmia – fast or slow
- Respiratory distress without clinical evidence of sepsis or infective cause
- Presumed chest infection failing to improve on appropriate treatment
- Any evidence of heart failure (clinical or radiological)
    - Displaced apex beat, S3 gallop rhythm, raised JVP, pulmonary oedema, hepatomegaly, peripheral oedema, ascites
    - Poor peripheral perfusion (weak pulses, cool extremities, prolonged capillary refill) without appropriate explanation (e.g. diarrhoea, vomiting, reduced oral intake)
- Chest pain in older children – typically crushing substernal with radiation, can be exertional

First Line Investigations if myocarditis suspected:

→CXR
Cardiomegaly, pericardial effusion, pulmonary oedema, pleural effusions, interstitial infiltrates

→ECG
Sinus tachycardia (out of proportion), low voltage QRS (< 5mm), T wave changes, ST segment changes, any tachy or brady-arrythmias

→BLOOD TESTS
Baseline bloods to exclude anaemia, infection and electrolyte disturbances

Consider performing cardiac enzymes (CK, AST, troponin I) if high index of suspicion – if raised needs admission with subsequent urgent echo/specialist assessment

Blood gas – to look for metabolic acidosis

If any of the above discuss with paeds SpR with low threshold for admission

ON THE WARD

Further Investigations:

→URGENT ECHOCARDIOGRAPHY
Enlarged ventricular end-systolic and diastolic dimensions, poor ventricular function, secondary valvular dysfunction, any regional wall abnormalities, pericardial effusions

→VIRAL/BACTERIAL SCREEN
Blood cultures, viral serum screen, Sputum/nasal cultures, throat swab

Most Common - Cocksackie, adenovirus
Less Common – parvovirus B19, HSV, EBV, CMV, Influenza
Rarely bacterial – Meningococcus, Streptococcus, Klebsiella, Diptheria, Tuberculosis

MANAGEMENT

→Mainly supportive

→Early involvement of specialist centres and paediatric cardiologist

→Careful monitoring of fluid balance

Medical

- Appropriate treatment if particular pathogen identified
- ? IV immunoglobulin
- Heart Failure – ACEI, diuretics (loop diuretics and aldosterone antagonists), nitrates, b-blockers
- Antiarrythmics as appropriate (beware digoxin worsening myocarditis)
- May need DC shock if SVT

Circulatory support for heart failure with poor cardiac output (by this stage specialist centres should be involved and transfer considered)

- Ionotropes such as dobutamine and milrinone – Use with caution due to risk of causing arrhythmias from irritated myocardium
- May need specialised mechanical circulatory support/ecmo- GOS bridge to transplant

Ventilatory support as necessary

- Non-invasive ventilation (CPAP)
- Intubate if required- use ketamine for induction