### PHARYNGITIS AND RHEUMATIC FEVER

#### Epidemiology

**Rheumatic fever:** Rare <2yrs; 5% <5yrs; most common 5-15yrs; high incidence in Maoris / Aboriginals; 75% resolve in 6/52; 90% resolve in 3/12; without recurrences, 60% valve lesions regress within 10yrs; RF occurs 2-6/52 after strep throat

**Recurrence:** only occurs with repeat infections; often mild symptoms; contribute to worsened valve damage; more common in young patients, usually within 3yrs; occurs in 10-50% (decreased once >2yrs)

#### Aetiology

Group A beta-haemolytic Strep (pyogenes); following pharyngitis; due to cross reactivity anti-strep antibodies with human connective tissue → affects connective tissue of heart, joints, CNS, subcutaneous tissues, skin → collagen-derived Aschoff bodies; endomyocarditis, valvulitis especially affecting mitral valve and aortic valve

#### Pharyngitis

**Viral:** 80-90% cases; rhinovirus, adenovirus, coronavirus, herpes virus 1, infectious mononucleosis, CMV; HIV seroconversion (90%)

**Bacterial:** 30-40% occur in children 3-13yrs; 5-10% <3yrs; 5-15% adults

Grp A strep pharyngitis: causes most bacterial pharyngitis; very uncommon <2yrs; found in 25% children >8yrs

**Symptoms:** less likely if child has cough / coryza; suggested by tonsillar exudate (present in up to 30% of non-bacterial causes also, therefore unhelpful in telling viral from GAS), scarlatiform rash

**Centor criteria:** if 2-3 criteria, do rapid strep test; if 3-4 criteria, treat

1. Tonsillar exudate
2. Tender ant cervical adenopathy
3. No cough
4. Fever

**Complications:** rheumatic fever, post-strep glomerulonephritis, peri-tonsillar abscess, retropharyngeal abscess, mediastinitis, erosion of carotid sheath → haemorrhage

**Investigations:** throat culture (90% sensitivity; only indicated if resistant to standard treatment; asymptomatic carriage in 10%); rapid antigen testing (80-90% sensitivity)

**Management:** antibiotic treatment decreases symptoms duration by ½ day, decreases severity of symptoms, shortens infectious period from 2/52 to 24hrs, decreases risk of rheumatic fever by 70%, of otitis media by 70%, of quinsy by 85%, of sinusitis by 50%; no effect on incidence of post-strep glomerulonephritis; most will improve without treatment in 3-4/7

Give penicillin 10mg/kg BD for 10/7 (roxithromycin 4mg/kg (max 150mg) BD if penicillin allergy; augmentin if fails to respond / recurrent (more anaerobic and beta-lactamase cover)

**Indications for antibiotics:** high incidence of rheumatic fever, PMH rheumatic fever, scarlet fever, systemically unwell, peritonsillar cellulitis / abscess, examination highly suggestive of bacterial infection

**Admit if:** systemic toxicity, inadequate PO intake, airway obstruction, immunosuppression, severe pain

**Grp C and G strep:** 5%; foot and water borne outbreaks

**Diphtheria:** systemically very unwell; grey pharyngeal membrane which may bleed on removal; neuritis, carditis; treat with penicillin / erythromycin + antitoxin

**Gonococcal:** often asymptomatic

**Others:** arcanobacterium haemolyticum, mycoplasma, chlamydia, anaerobics

**Quinsy:** peritonsillar abscess (between tonsillar capsule and muscles; due to infection of Weber’s glands); higher fever and more pain, trismus; treat with IV penicillin + metronidazole, or clindamycin; drainage with 19G needle ½ way between base of uvular and alveolar ridge, inserted <1cm (ICA is lateral and posterior to posterior tonsil); needle vs I+D equally as good; admit if: large, incompletely drained

**Post-tonsillectomy haemorrhage:** 1-6% incidence; due to sloughing of fibrinous debris from tonsillar bed 1Y: within 24hrs of operation

2Y: >24hrs post-tonsillectomy; usually due to infection; usually occurs 5-10/7 after operation

**Management:** sit up, NBM, 1:100,000 local adrenaline injection if clear bleeding point, 1:10,000 adrenaline (or thrombin) soaked gauze pads, nebulised adrenaline (5mg in 5ml), cauterise with silver nitrate; 40% require return to theatre; penicillin

#### Differential Diagnosis

1Y HIV infection can cause pharyngitis associated with GI symptoms and mucocutaneous lesions
<table>
<thead>
<tr>
<th>Diagnostic Criteria (Modified Jones Criteria)</th>
<th>Major</th>
<th>Minor</th>
<th>2 major or 1 major and 2 minor</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Carditis / new cardiac murmur</td>
<td>Fever &gt;38</td>
<td>PLUS Evidence of recent strep infection</td>
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<tr>
<td></td>
<td>Chorea</td>
<td>Arthralgia</td>
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<td></td>
<td>Subcutaneous nodules</td>
<td>PMH of rheumatic fever</td>
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<td>Migratory polyarthritis (not arthralgia)</td>
<td>ESR or CRP &gt;30</td>
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<td></td>
<td>Erythema marginatum</td>
<td>Prolonged PR interval</td>
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<td>Rising titre of anti-strep antibodies</td>
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**Assessment**

- Most are asymptomatic; recent pharyngitis in 70%
- **Carditis**: in 66%; new/changing murmurs, cardiomegaly, CCF, gallop rhythm, pericardial rub, Pericarditis
- **Erythema marginatum**: 10%; onset with fever; lasts up to 6/52; clear centres with round margins; mainly trunk and proximal limbs; never face; transient and migratory, non-itchy; also found in sepsis, glomerulonephritis, some drug reactions

**Investigations**

- **Swabs**: throat (usually negative by time of onset)
- **Bloods**: rapid strep test (95% specificity); ASOT (anti-streptolysin O titre) (sensitivity >90%; usually >250; rising titre important; increase in 1st 4/52, plateau at 3-6/52, normalise over 6-12/12); anti-DNAse B titres; ESR, CRP; anaemia; blood cultures if febrile
- **ECG**: prolonged PR; pericarditis
- **CXR**: if features of carditis; cardiomegaly, CCF
- **Echo**: if features of carditis; repeat if necessary if conduction abnormality

**Management**

- **Abx**: penicillin 10mg/kg BD for 10/7; erythromycin / roxithromycin if penicillin allergy
- **For carditis**: bed rest; trt of CCF (diuretics, fluid restriction if mild-mod; ACE inhibitors if severe); digoxin for AF; prednisone 1-2mg/kg/day
- **For arthritis**: NSAIDs, high dose aspirin (75-100mg/kg/day) for 1/52 then taper
- **For chorea**: valproate, haloperidol
- **No benefit**: aspirin, steroids

**Follow Up**

- At 4/52 and 6/12 to determine degree of valve disease and consider anticoagulation

**Prevention**

- **1Y**: Risk from strep throat decreases by 70% with antibiotics
- **2Y**: penicillin prophylaxis (250mg BD PO or 900mg IM penicillin Q1monthly) for 5yrs or until 18yrs (for 10yr or until 25yrs if mitral regurgitation; lifelong if severe valve disease); treat all subsequent episodes of pharyngitis with antibiotics