

THROAT INFECTIONS

ILOS

- Enumerate causes of throat infections
- Differentiate bacterial especially GAS from viral pharyngitis
- Define the sequelae of GAS pharyngitis
- Plan properly the treatment of Streptococcal pharyngitis and to criticize different treatment options.

DEFINITION

- Upper respiratory tract infections (URTIs) are the illnesses caused by an acute infection which involves the upper respiratory tract: nose, sinuses, pharynx or larynx (*Wikipedia, Sept., 9, 2011*).
- The most common infections in childhood with 6-8 colds / year (2-4 in adults).
- The most common medical reasons for school absenteeism.
- Account for 7% of all pediatrician visits.
- Approximately 1/3 of URTIs present with sore throat as the primary symptom.

ETIOLOGY OF ACUTE PHARYNGITIS

- The etiology is mostly viral with 5-30% are bacterial usually caused by GABHS.
- Non infectious causes include allergy or physical irritation
- GABHS infection is usually self-limited and therapy is usually indicated to prevent late sequelae as AGN or ARF.

Viral causes	Bacterial causes
Rhinoviruses (> 100 serotypes). Influenza Parainfluenza RSV Coronavirus Adenoviruses Enteroviruses Epstein-Barr Herpes simplex	Group A beta hemolytic Streptococci (GAS) Francisella tularensis Mycoplasma pneumoniae N. gonorrhea Corynebacterium diphtheriae Bacteria as Streptococcus pneumoniae, Haemophilus (?)

EPIDEMIOLOGY

- Infection occurs through contact with infected secretions and can be interrupted through hand hygiene
- Viral infections are common in fall, winter and spring.
- GAS infection is uncommon before 2-3 y and peaks in early school years and occurs most often in winter and spring.

Consider Viral	Consider Bacterial
Rhinorrhea Cough Diarrhea Conjunctivitis Older age	Acute onset Temp >38 Tender ant Cx LN Tonsillar erythema or exudate Age 3-15 years

Streptococcal score for GABHS pharyngitis (ACP/CDC, 2003)

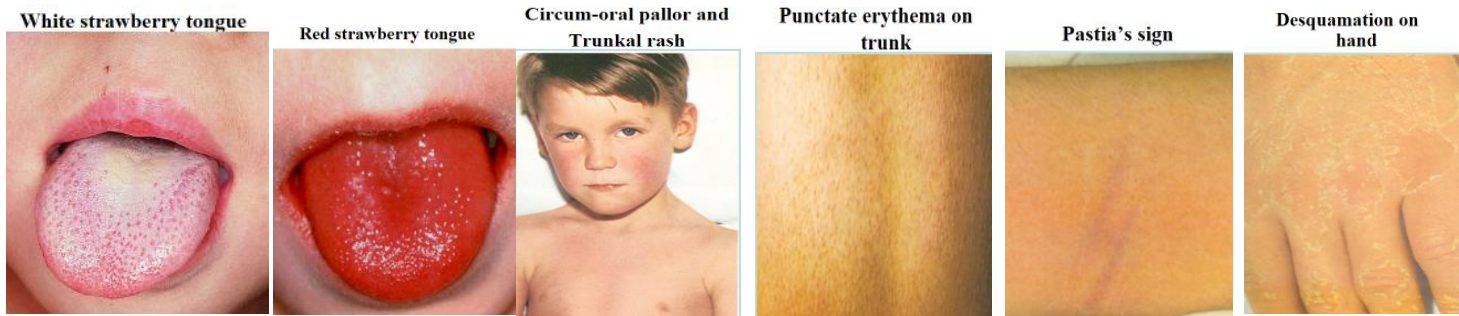
Symptom	Points	
fever	+1	
Absence of cough	+1	
Cervical adenopathy	+1	
Tonsillar exudate	+1	
Patient's age		
< 15 y	+1	
15-45 y	0	
>45 y	-1	
Score	Probability of Strept (%)	Action
-1 or 0	1	No testing or therapy
1, 2, 3	10-35	Rapid Ag test (RAT)
4,5	51	Empiric therapy or RAT

Streptococcal tonsillitis



Petechiae (doughnut) lesions in GAS pharyngitis





Scarlet Fever

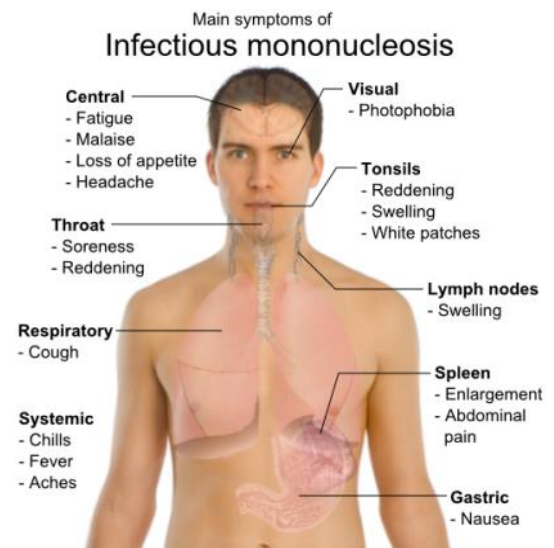
- Caused by erythrogenic toxin producing GAS
- Incubation Period: 2-4 days
- Isolation: 1-2 days after start of penicillin therapy
- Prodrome:
 - Duration: 12 hours to 2 day
 - Fever, vomiting, sore throat, chills, abdominal pain
- Enanthem: Red pharynx, tonsillitis, palatal petechiae, white strawberry → red strawberry tongue
- Exanthem
 - Relation to fever: Rash appears 12 hours after fever, fever ↑ as rash appears
 - Character:
 - Red pinpoint confluent, feeling like sandpaper (goose skin).
 - Face: no rash, flushed cheeks + circumoral pallor
 - Spreading: Neck, axillae, groins (in 1-2 days).
 - Desquamation after 7 days, starts on trunk & spreads to limbs
 - Diagnostic Features: Tonsillitis, circumoral pallor, pastia's sign

Epstein-Barr Virus (EBV)

- EBV, a member of the family **Herpesviridae**.
- Transmission through secretions, blood, may be sexual.
- Incubation period is 4-6 weeks
- Epstein-Barr virus (EBV) is the cause of mononucleosis (IM), which is characterized by:
 - Fever**
 - Sore throat**
 - Lymphadenopathy**
 - Lymphocytosis**

Clinical Manifestations of IM

Manifestation	Median Percentage of Patients (Range)
Symptoms	
Sore throat	75 (50–87)
Malaise	47 (42–76)
Headache	38 (22–67)
Abdominal pain, nausea, or vomiting	17 (5–25)
Chills	10 (9–11)
Signs	
Lymphadenopathy	95 (83–100)
Fever	93 (60–100)
Pharyngitis or tonsillitis	82 (68–90)
Splenomegaly	51 (43–64)
Hepatomegaly	11 (6–15)
Rash	10 (0–25)
Periorbital edema	13 (2–34)
Palatal enanthem	7 (3–13)
Jaundice	5 (2–10)



EBV Cervical Lymphadenopathy



Macular Rash of IM



EBV Pharyngitis



Diphtheria Tonsillopharyngitis



Diphtheritic pharyngitis, bull neck appearance



Herpangina (enteroviral infection)



Herpetic gingivostomatitis



Viral pharyngitis



Differential Diagnosis Of Mononucleosis-Like Illness

- Acute infection with cytomegalovirus.
- HIV.
- Human herpesvirus 6.
- Rubella.
- Hepatitis viruses .
- Drug hypersensitivity reactions.
- *Toxoplasma*.
- lymphoma or leukemia.

Complications Of GAS Pharyngitis

• Early Complications:

1. Otitis media
2. Pneumonia
3. Peritonsillar abscess

• Late Sequale

1. Acute Rheumatic Fever (ARF)
- Post Streptococcal glomerulonephritis (PSGN))

How can you differentiate EBV from GAS pharyngitis?

Item	EBV	GAS
Incubation period		
Fever		
lymphadenopathy		
HSM		
CBC		
EBV Serology		
Throat Culture		
Response to Penicillin		

LABORATORY DIAGNOSIS OF PHARYNGITIS

1. Complete blood count and WBCs morphology.
2. -Neutrophilia in bacterial infections.
3. -Lymphocytosis in viral cases.
4. -Atypical lymphocytes in EBV infections.
5. Throat culture is an imperfect gold standard for GAS isolation (why?).
6. Rapid antigen detection tests.
7. Viral cultures are slow and expensive.
8. PCR for viral detection is more rapid and may be useful in some situations
9. EBV serology

Treatment

- 1-Antibiotics
- 2-Symotomatic
- 3-Surical care

ANTIBIOTICS IN GAS PHARYNGITIS		SYMPTOMATIC
Oral penicillin V	250 mg bid for 10 days	<ul style="list-style-type: none"> Oral analgesic antipyretics such as acetaminophen or ibuprofen to relieve fever and sore throat. Gargling with warm salt water is often comforting Local anesthetic sprays may provide local relief especially in ulcerative stomatitis.
Oral amoxicillin	250 mg tid (750 mg once daily) for 10 days/ 50 mg/kg/d for 6 days.	
Intramuscular benzathine penicillin (LAP)	600,000 IU for those < 27 kg or 1,2 million units for larger children after exclusion of allergy.	
Macrolides as erythromycin	40 mg/kg/d for 10 days in allergic patients.	

SURGICAL CARE IN PHARYNGITIS

- Indications for tonsillectomy:
 - 4-5 confirmed group A streptococcal infections in a single year.
 - Chronic sore throat with adenopathy that is not responsible to treatment over 6 months.
 - Hypertrophied tonsils with obstruction of breathing or deglutition
- Drainage of peritonsillar abscess

HOME MESSAGE

- Up to 90% of URTI are of viral etiology.
- Throat congestion, exudate and tender anterior cervical adenopathy in children > 2 years are suggestive of streptococcal etiology
- Penicillin for 10 days is the drug of first choice in streptococcal sore throat infection.
- ARF and PSGN are important late sequelae of maltreated GAS throat infection.

QUIZ

- Throat infections are most commonly:
 - Viral
 - Bacterial
 - Fungal
 - Protozoal
- Bacterial sore throat is most commonly caused by:
 - Hemophilus b
 - GAS
 - Moraxiella
 - Gonococci
- GAS sore throat could be identified by **EXCEPT**:
 - Tender Cx LN
 - Erythema or congestion
 - White tonsillar exudate
 - Lymphocytosis in CBC
- EBV exudative pharyngitis is differentiated from GAS by:
 - Lymphadenopathy & HSM
 - Lymphocytosis
 - Lack of response to penicillin
 - All of the above