Diphtheria

Name- Corynebacterium diphtheria

Lesion - **Psedomembranous lesion**, tightly adhered to the underlying tissue, does not produce any secretions

Toxin- may or may not produce a toxin- laboratory investigations are hence essential. The toxin attacks cardiac myocytes and prevents protein synthesis within these cells causing infected people to die of cardiac failure

Vaccine- toxoid vaccine which produces no infection but effective due to inflammatory response generated by host (Infection control measure)

Treatment- Antibiotic(Penicillin G)+Antitoxin

Location- upper respiratory tract (if occurs on the vocal cords, it will obstruct the air pathway and can cause death due to asphyxation)

*scraping or dislodging of the lesion can damage the underlying tissue or cause bleeding
*unvaccinated people are usually affected

Otitis Media

Caused by Pseudomonas aeruginosa

Pharyngotonsillitis

Etiology: 80% idiopathic; 80% of the remaining 20% is caused by viral manifestation and the remaining 20% is caused by bacteria

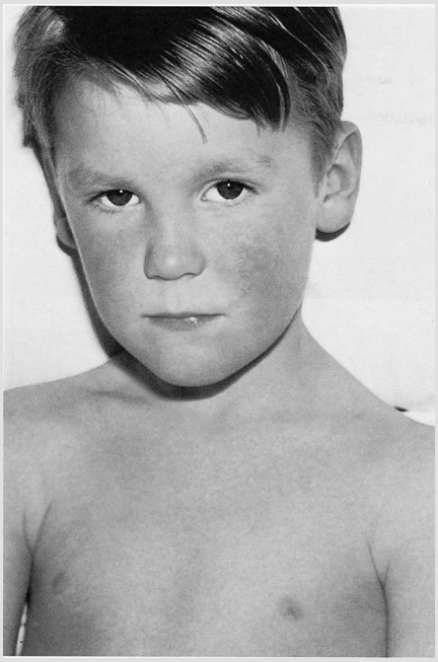
Bacterial cause: usually **Group A Streptococci (Streptococcus pyogenes)**.

Manifestations of Group A Strep

Streptococcus Pyogenes (group A strep) can have 2 manifestations when they enter a host:

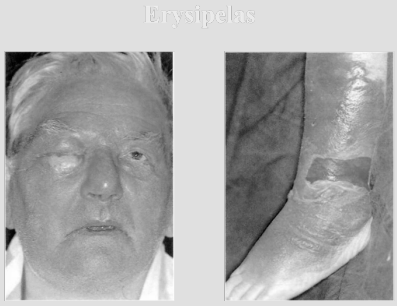
1. Infectious Diseases	Scarlet fever, Erysipelas, Necrotizing fasciitis (tissue necrosis)
2. Post Infectious Diseases / Inflammatory diseases	Rheumatic Fever, Post infection Glomerulonephritis

Scarlett Fever



Streptococcus Pyogenes (group A strep) is a common bacterial cause for pharyngitis or pharyngotonsillitis. Infestation of this bacteria can either cause ordinary pharyngitis or manifest as ***scarlett fever*** due to some strains of Streptococcus pyogenes being able to produce **erythrogenic toxins** .
Clinical presentation: rash (typicaly appearing on the head and neck first then body; more intense in skin folds called Pastia lines), perioral pallor, strawberry tongue

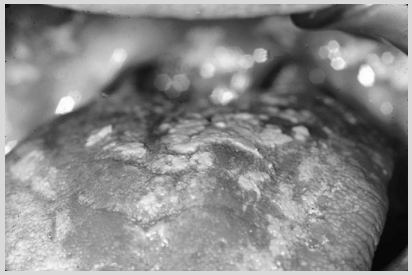
Erysipela



Diabetic patient -> skin infection -> bacterial infestation -> release of erthrogenic toxins -> Erysipela

Fungal Oral Infections

Candida

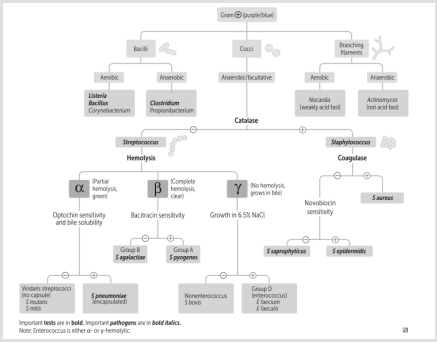


Structure: it is a type of a unicellular yeast which reproduces by budding

Risk factors:
Extreme of ages
Diabetes Mellitus
Antibiotics
Immunosuppression
Corticosteroids (including inhalers)

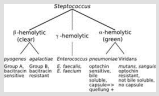
Treatment: ***Azoles*** are the drug of choice because they target ergosteroles (cell wall of fungi)

Gram positive bacteria lab algorithm



Group A streptococcus is :
beta-hemolytic
Bacitracin sensitive

Streptococci



The oral cavity has billions of Group A streptococci and they are the most common cause of pharyngitis in humans

Post Infection Diseases due to Group A strep

1. Rheumatic Fever	permanent condition and eventually requires valve replacement
Mechanism:	Molecular Mimicry
2. Poststreptococcal Glomerulonephritis	temporary and resolves without long lasting damage
Mechanism:	Complement Activation

Rheumatic Fever (Molecular Mimicry)

M protein is a sequence of amino acids present on the bacteria and also present on the cells of the heart. This bacterial M protein is the target of the host immune system. however ~20 days post infection, the host's immune cells attack their own body i.e the M cells of the heart. This is called **molecular mimicry** and involves **cross reactive antibodies** (attack foreign and later self).

Molecular mimicry often leads to post-infection manifestations such as Rheumatic Fever	Rheumatic fever is an example of a post-infectious disease (due to the response of the inflammatory cells on self) that can develop as a complication of inadequately treated strep throat or scarlet fever.
Rheumatic Fever is characterised by **transient arthiritis**	It damages the heart valves and increases the rigidity of chorda tendinae causing mitral insufficiency

Post Streptococcal Glomerulonephritis

(**Complement Activation**)

this disorder produces proteins that have affinity for sites in the glomerulus. As soon as binding occurs to the glomerulus, complememtn is activated. Activation of complement causes generation of inflammatory mediators. Immune complexes are trapped in a subepithelial pattern.

Post Infection sequelae

If blood culture involves **Anti Streptolysin O and Anti DNAase B** then antibodies should be checked again and again as the child is suspecte of having a streptococcus infection which may lead to greater complications

Arcanobacterium Haemolyticum

If culture for Group A,C and G is negative for a case of repetitive/recurring pharyngotonsillitis wherein the patient presents with fever, this bacteria must be considered because it has serious implications

Manifestations:	pharyngitis, osteomyelitis, sepsis, invasive infections

Streptococcal Shock Syndrome

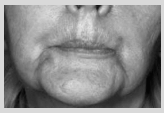
Cause	due to use of internal tampons

Streptococcal Shock Syndrome (cont)

Signs: Hypotension, Fever >38.5, Rash, Renal Impairment, Coagulopathy /DIC Alteration liver enzymes, Acute Respiratory Distress Syndrome (ARDS), Tissue necrosis (necrotizing fasciitis)

Fungal Oral Infections

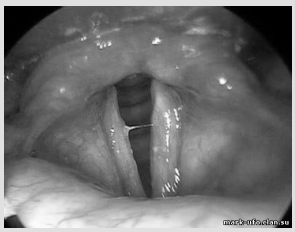
Angular Cheillitis (Perleche)



This condition is called angular chellitis (Perleche) which is inflammation of the corners of the mouth usually in those elderly who wear dentures. if present, most likely candida will also be present

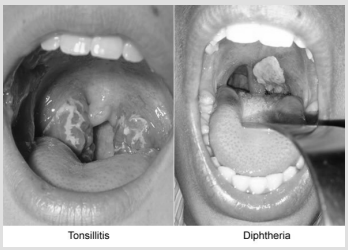
Candida is very common in elderly people who wear dentures and also due to the fact that they commonly have xerostomia (dry mouth) which is an excellent growth factor for the fungi

Diphtheria



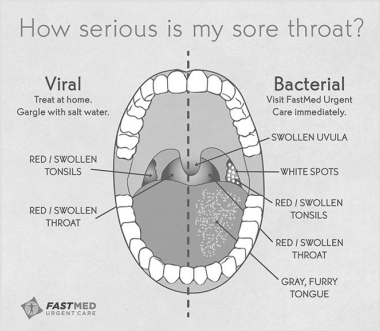
Manifestation of diphtheria on the vocal cords which can dislodge and move in the respiratory tract causing asphyxation

Diphtheria



Pseudomembranous lesion of diphtheria in the oral cavity

Pharyngotonsillitis



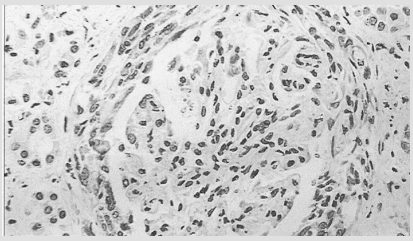
Viral vs Bacterial manifestation

*Pharyngitis accompanied by rhinitis, conjunctivits, diarrhoea,etc is most likely ***viral***

*Pharyngitis accompanied by fever, headache, tender cervical lymph nodes is most likely ***bacterial***

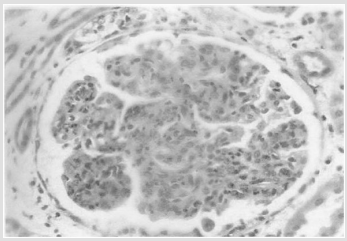
*Throat culture and rapid screening is standard for diagnosis as they are highly sensitive for Group A streptococcus

Rheumatic Fever



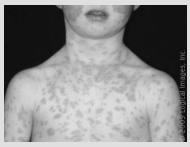
Aschoff bodies (granulomatous lesion) present in the myocardium in Rheumatic Fever

Post Streptococcal Glomerulonephritis



Acute poststreptococcal glomerulonephritis. The glomerulus of a patient who developed glomerulonephritis after a streptococcal infection is hypercellular because of the proliferation of endothelial and mesangial cells and infiltration by neutrophils.

Parovirus B19



Fifth disease (slapped cheek rash) is an acute viral disease characterized by mild symptoms and a blotchy rash beginning on the cheeks and spreading to the extremities.

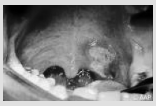
Caused by : Parvovirus B19

Fungal Oral Infections

Vincet's Angina

Clinical presentation	unilateral sore throat that increases in intensity over several days with earache, a bad taste and fetid breath
Pathology	necrotising infection of pharynx
Cause	combination of ***Fusiform bacteria*** and ***Spirochetes***
Manifestation	deep well circumscribed unilateral ulcer of one tonsil. The base of the ulcer is gray and bleeds easily when scraped with a swab. There may be submandibular lymphadenopathy.
Treatment	Penicillin or Clindamycin and surgical debridement

Vincent's Angina



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