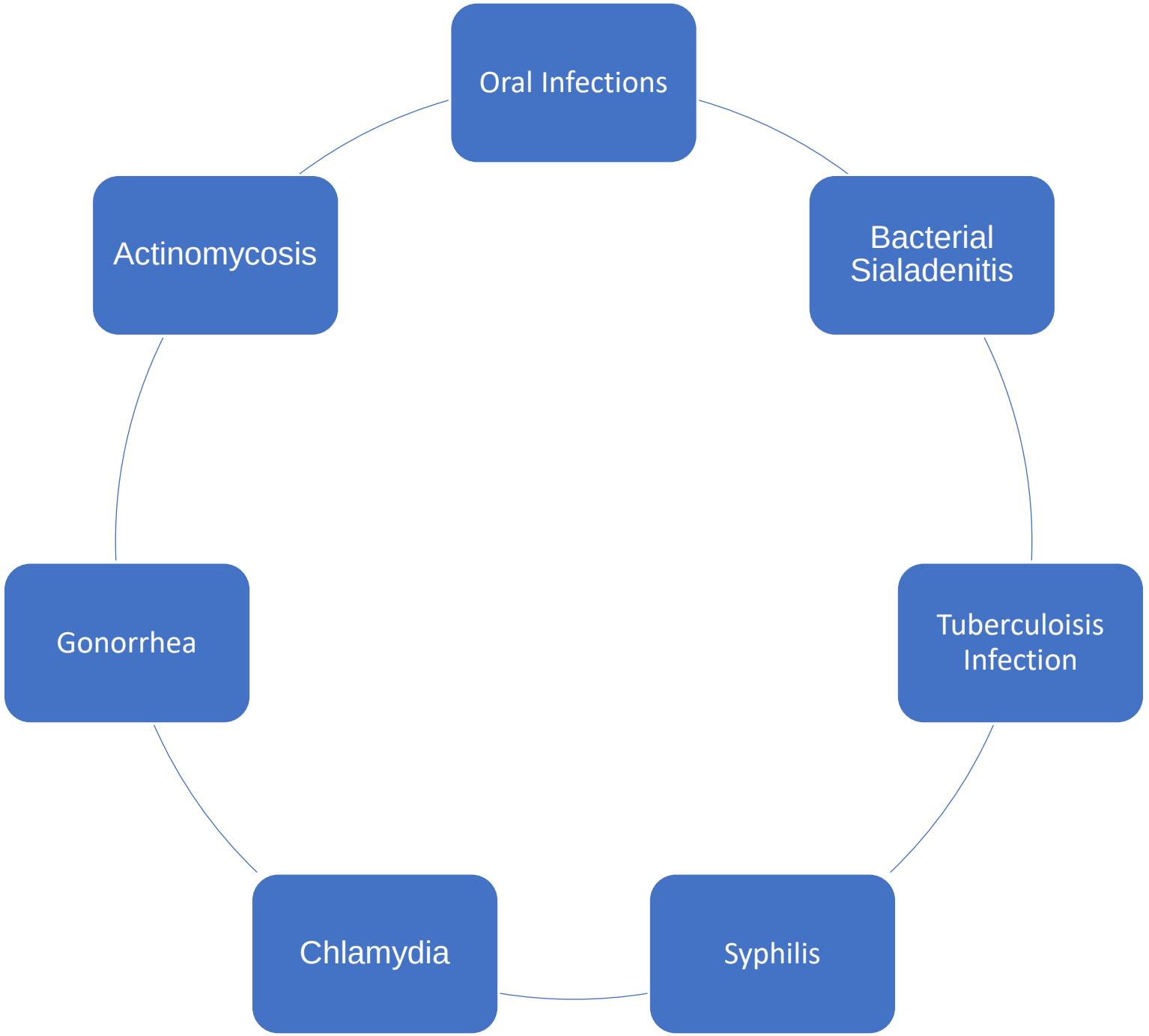
Bacterial Infections of Oral & Maxillofacial Region

Dr.Farshad Javadzadeh

Oral & Maxillofacial Specialist

Oral & Maxillofacial Department of Tabriz University of Medical Sciences


Oral Infections
Bacterial Sialadenitis
Tuberculoisis Infection
Syphilis
Chlamydia
Gonorrhea
Actinomycosis

Dental Infections

Sinusitis

Bacterial Sialadenitis

- Acute and chronic bacterial sialadenitis

Risk factors:

- Dehydration
- Use of xerogenic drugs
- Salivary gland diseases
- Nerve damage
- Ductal obstruction, irradiation,
- Chronic systemic diseases (diabetes mellitus and Sjogren’s syndrome)

Bacterial Sialadenitis

- Parotide
- Mucin antibacterial effect
- Fewer protective lysozyme and IgA antibodies in parotid secretions
- Anatomy and tongue movements

Complications of bacterial sialadenitis

- Facial nerve palsy
- Sepsis
- Mandibular osteomyelitis
- Internal jugular vein thrombophlebitis
- Respiratory obstruction

Clinical Manifestations

- 20% of cases are bilateral
- Gland is enlarged, warm, painful, indurated,
- Tender to palpation
- Erythema of the overlying dermis
- Trismus, and dysphagia

Differential Diagnosis

- Viral parotitis
- Bilateral
- Affect younger patients
- Prodromal symptoms
- Do not involve purulent drainage
- Patients appear less unwell

Laboratory Findings

- Culture
- Staphylococcus aureus

- Cbc diff
- Leukocytosis with neutrophilia

Treatment

- Antistaphylococcal penicillin
- A combination β-lactamase inhibitor, or a first-generation cephalosporin.
- Macrolides such as azithromycin with metronidazole
- Intraductal instillation of penicillin or saline

TUBERCULOSIS

- Mycobacterium tuberculosis
- Intracellular rod
- An acid-fast
- Nonmotile
- Aerobe

- Transmitted by way of infected airborne droplets

BOX 7.7 Persons at Increased Risk for Progression of Infection to Active Tuberculosis (TB)

- Persons with human immunodeficiency virus infection
- Infants and children younger than 5 years of age
- Persons who are receiving immunosuppressive therapy such as with TNF-α antagonists, systemic corticosteroids equivalent to 15 mg or more of prednisone per day, or immunosuppressive drug therapy after organ transplantation
- Persons who were recently infected with *Mycobacterium tuberculosis* (within the past 2 years)
- Persons with a history of untreated or inadequately treated active TB, including persons with fibrotic changes on chest radiographs consistent with previous active TB
- Persons with silicosis; diabetes mellitus; chronic renal failure; leukemia; lymphoma; solid organ transplant; or cancer of the head, neck, or lung
- Persons who have had a gastrectomy or jejunoileal bypass
- Persons who are underweight (weigh <90% of their ideal body weight) or malnourished
- Cigarette smokers and persons who abuse drugs or alcohol
- Populations defined locally as having an increased incidence of active TB, possibly including medically underserved and low-income populations

TUBERCULOSIS

- Most commonly through coughing but also by sneezing and talking.
- The quantity and size of expelled droplets.
- Smaller droplets easily inhaled.
- Larger droplets quickly settle to the ground.

PATHOPHYSIOLOGY AND COMPLICATIONS

- lungs
- Replication within alveolar macrophages
- Ghon complex in lymph nodes
- After 2-8 week positive PPD

Table 21-2 High-risk groups recommended for purified protein derivative testing.

1) People who have spent time with someone who has tuberculosis (TB) disease
2) People with HIV infection or another medical problem that weakens the immune system
3) People who have symptoms for TB disease (fever, night sweats, cough, and weight loss)
4) People from a country where TB disease is common (most countries in Latin America, the Caribbean, Africa, Asia, Eastern Europe, and Russia)
5) People who live or work somewhere in the United States where TB disease is more common (homeless shelters, prison or jails, some nursing homes)
6) People who use illegal drugs

Source: Centers for Disease Control, 2018.

CLINICAL PRESENTATION

- Cough
- Lassitude and malaise,
- Anorexia
- Unexplained weight loss
- Night sweats
- Fever
- Persistent cough

Table 21-1 Risk factors for tuberculosis (TB).

Risk Factor	Comment
HIV	Persons living with HIV are 15–22 times more likely to develop TB than persons without HIV In 2018, 251,000 death from HIV-associated TB were reported
Diabetes	A person with diabetes has a 2–3 times higher risk for acquiring TB Diabetes can worsen the course of TB and TB can worsen glycemia control for people with diabetes
Malnutrition	Malnutrition increases the risk of TB and TB can lead to malnutrition
Tobacco	Tobacco smoking increases the risk of TB by 2–3-fold and is associated with poor TB treatment results
Harmful use of alcohol	Harmful use of alcohol increases the risk of TB 3-fold and it is also a strong risk factor for poor TB treatment adherence

Source: World Health Organization, 2020.

LABORATORY AND DIAGNOSTIC FINDINGS

- Culture or direct molecular tests
- Three consecutive morning sputum specimens
- Tuberculin (mantoux) skin test
- A blood test known as the interferon-gamma release assay (IGRA)

TABLE 7.2 Significance of Positive Results on Purified Protein Derivative Testing

Groups at Risk for Progression to Active TB Disease, Stratified by Induration Size

Positive IGRA Result or a TST Reaction of ≥5 mm	Positive IGRA Result or TST Induration ≥10 mm	TST Induration ≥15 mm
• HIV-infected persons • Recent contacts of a TB case • Persons with fibrotic changes on chest radiographs consistent with old TB • Persons who are immunosuppressed for other reasons (e.g., taking the equivalent of >15 mg/day of prednisone for 1 month or longer; taking TNF-α antagonists)	• Children younger than <5 years of age and children and adolescents exposed to adults in high-risk categories • Recent immigrants (<5 years) from high prevalence countries • Injection drug users • Residents and employees of high-risk congregate settings • Mycobacteriology laboratory personnel	All persons in this category are considered to have TB (despite absence of risk factors for TB)

HIV, Human immunodeficiency virus; *IGRA,* interferon-gamma release assay; *TB,* tuberculosis; *TNF-α,* tumor necrosis factor-α; *TST,* tuberculin skin test.

MEDICAL MANAGEMENT

Table 21-3 Treatment for tuberculosis (TB) infection.

Category	Medication Regimens*
Latent TB	Isoniazid monotherapy daily for 9 months Rifampicin-based treatment daily for 4 months Isoniazid and rifapentine weekly for 3 month Isoniazid and rifampicin-based treatment daily for 3 months
Active TB without central nervous system involvement	Isoniazid (with or without pyridoxine), rifampicin, pyrazinamide, and ethambutol for 2 months, then isoniazid (with or without pyridoxine) and rifampicin for a further 4 months
Active TB with central nervous system involvement	Isoniazid (with or without pyridoxine), rifampicin, pyrazinamide, and ethambutol for 2 months, then isoniazid (with or without pyridoxine) and rifampicin for a further 10 months

DENTAL MANAGEMENT

- Rubber dam
- After receiving chemotherapy for at least 2 to 3 weeks
- A child(less than 6y) with active TB who is receiving chemotherapy usually can be treated as an outpatient

- All family members who have had contact with the child should provide a history of skin testing and chest radiography

DENTAL MANAGEMENT

- Bleeding…… INH and rifampin
- Hepatotoxicity……. INH, rifampin, and pyrazinamide/acetaminophen

Rifampin:

- Increases the incidence of infection, delayed healing, gingival bleeding
- Decreases serum levels of: diazepam, triazolam, erythromycin, clarithromycin, ketoconazole, itraconazole, fluconazole and oral contraceptives

TABLE 7.3 Dental Treatment Considerations With Antituberculosis Drugs

Drug (Trade Name)	Adverse Effects	Dental Considerations
Isoniazid (INH) (Laniazid, Nydrazid, Tubizid)	Hepatotoxicity; elevation in serum aminotransferase activity in 10%–20% of patients*; rash, fever, peripheral neuropathy	Avoid acetaminophen Increases the concentrations of other drugs (e.g., diazepam)
Rifampin (Rifadin, Rimactane), Rifabutin, Rifapentine	Hepatotoxicity; GI disturbances, flulike symptoms, thrombocytopenia, rash; turns urine red-orange	Increases the incidence of infection, delayed healing, gingival bleeding; bidirectional interaction that decreases serum levels of diazepam, triazolam, erythromycin, clarithromycin (Biaxin), ketoconazole (Nizoral), itraconazole (Sporanox), fluconazole (Diflucan), and oral contraceptives
Pyrazinamide (generic)	Arthralgias, rash (photoallergy), hyperuricemia, GI disturbances, arthralgias, and hepatitis	—
Ethambutol (Myambutol)	Decreased red-green color discrimination; reduced visual acuity; optic neuritis (rare)	—
Ethionamide (Trecator-SC)	—	—
Streptomycin (generic)	Ototoxicity, vestibular disturbances, infrequent renal toxicity, perioral numbness	Avoid concurrent use of aspirin
Amikacin (Amikin), kanamycin (Kantrex), capreomycin (Capastat)	Nephrotoxicity and ototoxicity	Avoid concurrent use of aspirin
Cycloserine	Neurotoxicity and hypersensitivity, vitamin deficiency	—
Aminosalicylic acid (Sodium P.A.S., Teebacin)	GI disturbances	—

ORAL MANIFESTATIONS

- Painful, deep, irregular ulcer on the dorsum of the tongue.
- The palate, lips, buccal mucosa, and gingiva also may be affected
- Osteomyelitis
- Scrofula (The cervical and submandibular lymph nodes)



Syphilis

- Treponema pallidum
- Great imitator
- Genitalia
- MSM

Syphilis

Treponema pallidum

killed by:

- Heating
- Drying
- Disinfecting
- Using soap and water

Syphilis

Treponema pallidum:

- Not invade completely intact skin
- Invade intact mucosal epithelium
- Gain entry via minute abrasions or hair follicles

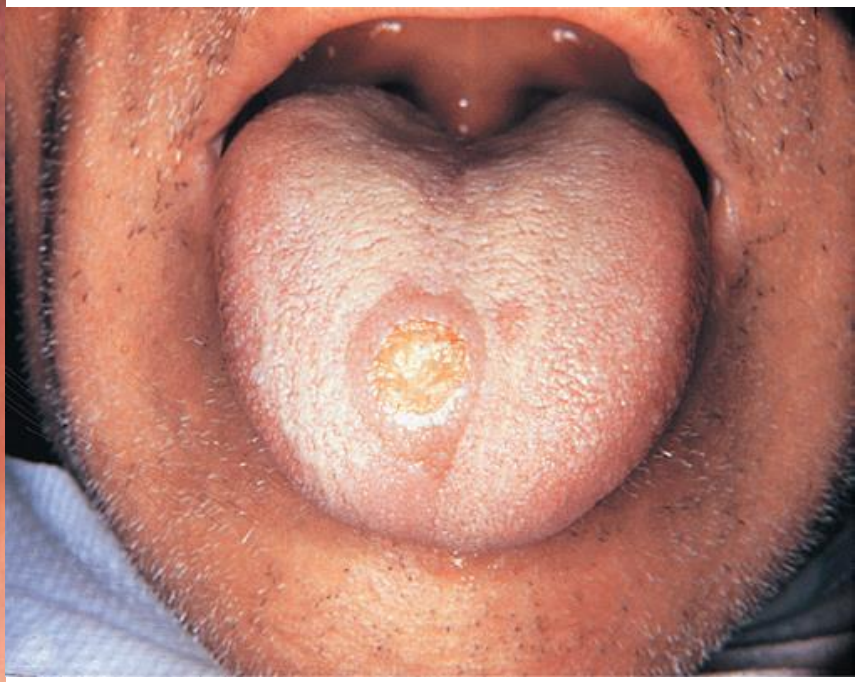
Syphilis

Staging:

1) Primary
2) Secondary
3) Tertiary

Primary Syphilis

- Characterized by the chancre
- Solitary (although multiple chancres are possible)
- Round
- Painless
- Ulcer/crust
- Scar
- 10-90 days after contact/ subsides in 3 to 6 weeks without treatment
- 80% genital/ oral & oropharynx



Secondary Syphilis

- 6 to 8 weeks after initial exposure
- Fever, malaise, headache, arthralgias, generalized lymphadenopathy
- Maculopapular skin rashes
- Warty lesions
- Condyloma lata,(genitalia,oral cavity)
- Lues maligna (HIV)

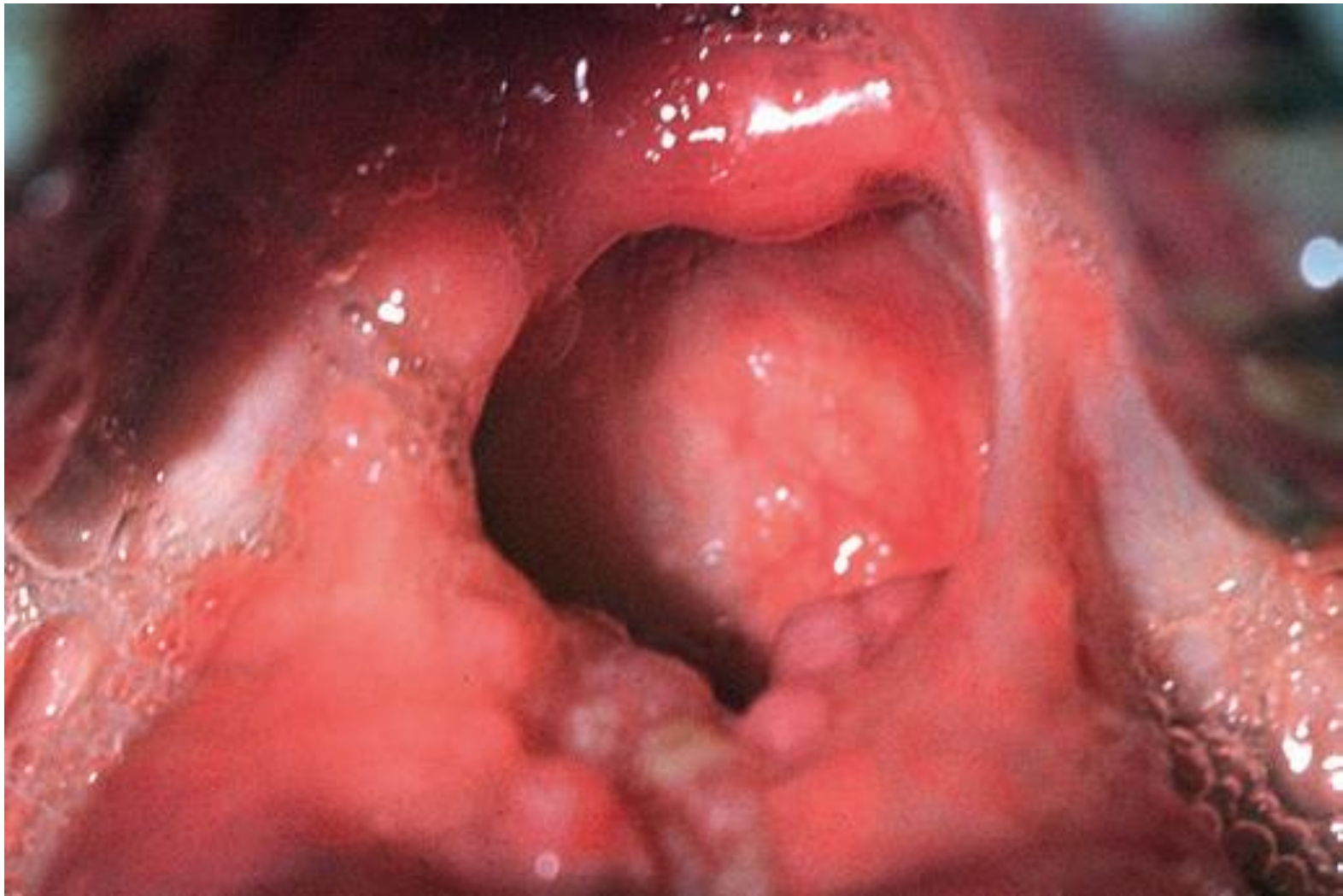
Tertiary Syphilis

- Noninfectious

Groups:

1) Neurosyphilis
2) Cardiovascular
3) Gummatous disease

The gumma



LABORATORY AND DIAGNOSTIC FINDINGS

- Never been cultured
- Dark-field microscopic examination
- PCR
- Nontreponemal tests (VDRL, PCR)
- Treponemal testing

MEDICAL MANAGEMENT

- Parenteral injection of long acting benzathine penicillin G, 2.4 million IU IM in a single dose

- Injections of 2.4 million IU IM once a week for 3 weeks

- Doxycycline (100 mg orally twice a day for 2 weeks)
- Tetracycline 500 mg four times a day for 2 weeks.

DENTAL CONSIDERATIONS

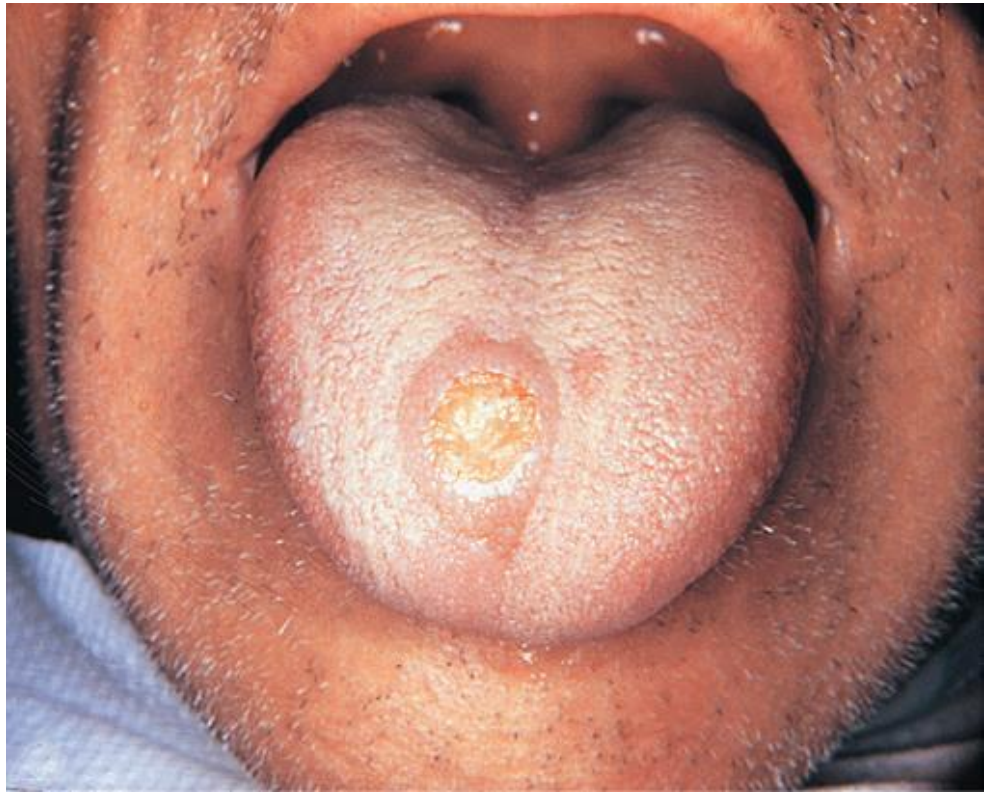
Infectious:

- Lesions of untreated primary and secondary syphilis
- Patient’s blood and saliva

ORAL MANIFESTATIONS

Primary Syphilis:

- Oral chancres are typically solitary lesions
- Lips, tongue, oropharynx,
- Lymphadenopathy
- Induration.



ORAL MANIFESTATIONS

Secondary Syphilis:

- Single or multiple lesions such as mucous patches
- Maculopapular lesions
- Erosions
- Ulcerations including a peculiar “snail-track” variety
- White plaques resembling leukoplakia
- Papulonodular lesions

ORAL MANIFESTATIONS

Tertiary Syphilis:

- Oral gumma
- Solitary lesion
- Tongue and palate
- Exophytic, indurated, and with surface ulceration
- Oronasal or oralantral fistula in palatal lesion
- An atrophic or interstitial glossitis

ORAL MANIFESTATIONS

- Congenital syphilis
- Peg-shaped permanent central incisors with notching of the incisal edge (Hutchinson’s incisors)
- Defective molars with multiple supernumerary cusps (Mulberry molars)
- A high narrow palate, and perioral rhagades (Skin fissures).

RISK?

- Great imitator
- Risk factor for Oral Squamous Cell Carcinoma
- Tongue
- Syphilitic glossitis associated with tertiary syphilis

Chlamydia

- Chlamydia trachomatis
- An obligate intracellular gram-negative bacterium
- Most reported STI worldwide

Clinical Presentation

- Vaginal, anal, or oral sex with an infected partner.
- Genital infections
- Pelvic inflammatory disease (PID)

- Pharyngitis and conjunctivitis

Clinical Presentation

- Lymphogranuloma venereum (LGV)
- Genital ulcers with lymphadenopathy

Diagnosis

- Nucleic acid amplification testing (NAAT)

Treatment

- Doxycycline
- Azithromycin

Oral/Facial Considerations

- Asymptomatic
- Fever and lymphadenopathy may occur
- Erythema with small punctate lesions in tonsillar infections
- Erythematous, pustular, erosive, or ulcerated

Gonorrhea

- Neisseria gonorrhoeae
- Gram-negative bacterium
- Younger individuals

Clinical Presentation

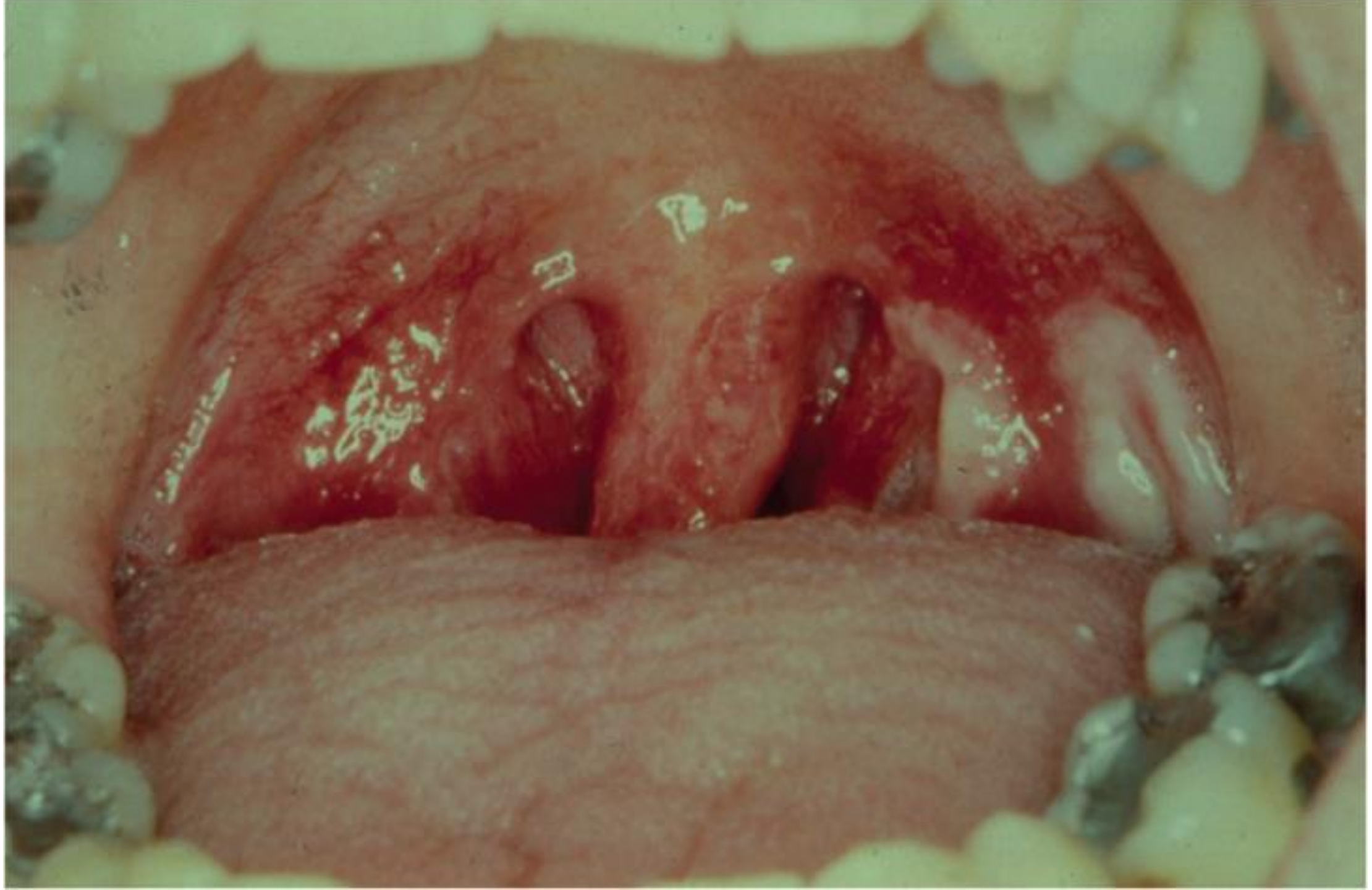
- Cervicitis
- Urethritis
- Epididymitis
- Conjunctivitis, and pharyngitis
- Women can develop ectopic pregnancy, and infertility
- Joint infection

Diagnosis & Treatment

- Naat
- Ceftriaxone

Oral/Facial Considerations

- Multiple ulcers
- Fiery red oral mucosa
- Pseudomembrane
- Painful pharyngitis
- Atypical gingivitis
- Lymphadenopathy



Actinomycosis

- Actinomyces
- Colonize the oropharynx, gastrointestinal tract, and pelvis

Risk factors:

- Poor oral hygiene
- Local tissue damage by trauma
- Recent surgery
- Irradiation
- Intrauterine devices (IUD) for pelvic infections
- Diabetes

Clinical Presentation

- Orocervical (50%), thoracic (20%), and abdominal pelvic regions (20%)
- Muscular injury
- Penetration - anaerobic environment

Diagnosis

- Biopsy
- Gram-positive filamentous bacteria with or without “sulfur granules.”

Treatment

- Systemic antibiotics with or without surgery
- Penicillin-based antibiotics
- Penicillin, amoxicillin, amoxicillin-clavulanate

Oral/Facial Considerations

- Soft tissue swelling
- Myositis and osteomyelitis