Chapter 4

Infectious Diseases

Outline
- Bacterial Infections
- Fungal Infections
- Viral Infections

Bacterial Infections
- Impetigo
- Tonsillitis and Pharyngitis
- Tuberculosis
- Actinomycosis
- Syphilis
- Necrotizing Ulcerative Gingivitis
- Pericoronitis
- Acute Osteomyelitis
- Chronic Osteomyelitis

Infectious Diseases
- We are surrounded and inhabited by an enormous number of microorganisms.
- Whether the organisms cause disease depends on the microorganism and the body's defenses.
- Traditionally, the microorganisms are divided according to whether they are disease causing (pathogenic) or non–disease causing (nonpathogenic).

Infectious Diseases (cont.)
- The oral cavity may be the primary site of involvement of an infectious disease, or a systemic infection may have oral manifestations.
- There are different routes of infection:
  - Transferred through the air on dust particles or water droplets
  - Some may require intimate and direct contact.
  - Some may be transferred by hands or objects.

Infectious Diseases (cont.)
- Microorganisms invading oral tissue can cause local infection, systemic infection, or both.
- Microorganisms in the bloodstream can cause lesions in the oral cavity.
- Microorganisms causing infection in the lungs can be transferred to oral tissue and be present in saliva.
Oral flora may be affected by changes in salivary flow, administration of antibiotics, and changes in the immune system.

Opportunistic infection
- When an organism that usually is nonpathogenic causes disease

Opportunistic infection
- Microorganisms may penetrate epithelial surfaces as foreign bodies.
  - They stimulate the inflammatory response.
    - This is a nonspecific response that results in edema and the accumulation of a large number of white blood cells.
  - They stimulate the immune system
    - This is a highly specific response that results in the production of antibodies to the microorganisms that act as antigens.

Humoral immunity (antibodies) is an effective defense against some microorganisms.
- Cell-mediated immunity is an effective defense against others such as intracellular bacteria, viruses, and fungi.

Impetigo
- A bacterial skin infection
- Caused by Streptococcus pyogenes and Staphylococcus aureus
- Most commonly involves the skin of the face or extremities
- Usually seen in young children
- Requires nonintact skin for infection

Diagnosis and management
- Lesions are either vesicles or bullae.
- The lesions may itch and regional lymphadenopathy may be present.
- The bacteria may be identified from cultures of the lesion.

Treatment
- Topical or systemic antibiotics
Tonsillitis and Pharyngitis

- Inflammatory conditions of the tonsils and pharyngeal mucosa
- May be due to many different organisms
- Clinical features may include sore throat, fever, tonsillar hyperplasia, and erythema of the oropharyngeal mucosa and tonsils.
- May be spread by contact with infectious nasal or oral secretions

Diagnosis and Management

- Laboratory tests can confirm streptococcal cause.
- Group A β (beta)-hemolytic streptococci are related to scarlet fever and rheumatic fever.

Scarlet Fever

- Usually occurs in children
- Patients have a fever and a generalized red skin rash caused by a toxin released by the bacteria.
- Oral manifestations in addition to streptococcal tonsillitis and pharyngitis include
  - Petechiae on the soft palate
  - Strawberry tongue
  - Fungiform papillae are red and prominent with the dorsal surface of the tongue exhibiting either a white coating or erythema.

Rheumatic Fever

- A childhood disease that follows a group A β-hemolytic streptococcal infection
- Characterized by an inflammatory reaction involving the heart, joints, and central nervous system
- Heart valve damage may occur.
- This may require the patient to be premedicated prior to dental hygiene treatment.

Tuberculosis

- Usually caused by the organism Mycobacterium tuberculosis
- The chief form of the disease is an infection of the lungs caused by the bacteria.
  - The organisms are resistant to destruction by macrophages.
  - After being engulfed, they multiply in the macrophages and then disseminate in the bloodstream.

Signs and symptoms

- Include fever, chills, fatigue and malaise, weight loss, and persistent cough
- Milary tuberculosis
  - Involvement of organs such as kidney and liver in widespread areas of the body
- Scrofula
  - Involvement of submandibular and cervical lymph nodes
- Oral lesions may occur but they are rare.
  - Appear as painful, nonhealing, superficial or deep slowly enlarging ulcers
Tuberculosis (cont.)

Diagnosis of Tuberculosis

- Oral lesions
  - Identified by biopsy and microscopic examination
    - Chronic granulomatous lesions with areas of necrosis surrounded by macrophages, multinucleated giant cells, and lymphocytes
  - Tissue
    - May be stained to reveal the organisms

- Skin test
  - An antigen is injected into the skin.
    - Purified protein derivative (PPD)
  - A positive inflammatory reaction occurs if the person has previously been exposed to the antigen.
  - Chest radiographs may be taken after a positive skin test to see if active disease is present.

Tuberculosis

- Skin test
  - An antigen is injected into the skin.
    - Purified protein derivative (PPD)
  - A positive inflammatory reaction occurs if the person has previously been exposed to the antigen.
  - Chest radiographs may be taken after a positive skin test to see if active disease is present.

- An increase has been reported in both the number of reported cases and in cases that are resistant to standard drug regimens.
  - Tuberculosis incidence has been related to HIV infection and increased immigration from countries where tuberculosis is endemic.
  - It is considered an occupationally transmitted disease in dentistry.
    - Standard precautions can prevent transmission.
    - If the patient has active tuberculosis, treatment can be deferred.

Treatment and Prognosis of Tuberculosis

- Combination medications, including isoniazid (INH) and rifampin
  - Treatment may continue for months or years.
  - The patient’s physician should be consulted to determine whether the patient is infectious.

Actinomycosis

- An infection caused by a filamentous bacterium – Actinomyces israelii
  - Forms abscesses that tend to drain by sinus tracts
    - Sulfur granules
      - The colonies of organisms appear in pus as tiny, yellow grains.
  - The organisms are common, normal inhabitants of the oral cavity.
    - Predisposing factors have not been identified but infection is often preceded by extraction or an abrasion of mucosa.
**Actinomycosis (cont.)**

- **Diagnosis**
  - Identification of colonies in tissue from the lesion
- **Treatment and prognosis**
  - Long-term high doses of antibiotics

---

**Syphilis**

- **Caused by a spirochete Treponema pallidum**
- **Transmitted by direct contact**
  - The organisms die when exposed to air and changes in temperature.
- **Usually transmitted through sexual contact but may be transmitted through transfusion of infected blood or to a fetus from an infected mother**

- **Three stages**
  - Primary stage
    - The lesion of the primary stage is a chancre
      - It forms where the spirochete enters the body.
      - It is highly infectious.
      - It heals spontaneously and the disease enters a latent period.

---

**Syphilis (cont.)**

- **Caused by a spirochete Treponema pallidum**
- **Transmitted by direct contact**
  - The organisms die when exposed to air and changes in temperature.
- **Usually transmitted through sexual contact but may be transmitted through transfusion of infected blood or to a fetus from an infected mother**

---

**Syphilis (cont.)**

- **Three stages**
  - Primary stage
    - The lesion of the primary stage is a chancre
      - It forms where the spirochete enters the body.
      - It is highly infectious.
      - It heals spontaneously and the disease enters a latent period.
Syphilis (cont.)

- **Secondary stage**
  - Diffuse eruptions occur on skin and mucous membranes
  - Mucous patches
    - Oral lesions that appear as multiple, painless, grayish white plaques covering ulcerated mucosa
    - These lesions are the most infectious.
    - They undergo spontaneous remission but may recur for months or years.

- **Tertiary stage**
  - Chiefly involves the cardiovascular system and the nervous system
  - Gumma
    - A firm mass
    - Noninfectious
    - A destructive lesion that can result in perforation of the palatal bone

Congenital Syphilis

- (pg. 122)
  - Transmitted from an infected mother to the fetus
  - May cause serious and irreversible damage
  - Facial and dental abnormalities

Diagnosis and Treatment of Syphilis

- (pg. 123)
  - Lesions on skin may be identified by dark-field microscopy
  - Blood tests include VDRL and fluorescent treponemal antibody absorption test (FTA-ABS)
  - Treatment
    - Treated with penicillin

Necrotizing Ulcerative Gingivitis

- (pg. 123)
  - A painful, erythematous gingivitis with necrosis of interdental papillae
  - Most likely caused by both a fusiform bacillus and a spirochete (Borrelia vincentii)
  - Associated with decreased resistance to infection

Necrotizing Ulcerative Gingivitis (cont.)
Necrotizing Ulcerative Gingivitis (cont.)

- **Diagnosis**
  - Necrosis results in cratering of the interdental papillae.
  - Sloughing of necrotic tissue causes a pseudomembrane over the tissue.

- **Treatment**
  - Gentle debridement
  - Antibiotics if fever is present

Pericoronitis

- (pg. 123)
  - Inflammation around the crown of a partially erupted, impacted tooth
  - Most commonly a lower third molar
  - Trauma from an opposing molar and impacted food under the soft tissue flap (operculum) may precipitate.

Diagnosis of Pericoronitis

- The tissue around the crown of a partially erupted tooth is swollen, erythematous, and painful.

Treatment and Prognosis of Pericoronitis

- Mechanical debridement
- Irrigation of the pocket
- Systemic antibiotics
- Often the long-term solution is removal of the offending tooth

Acute Osteomyelitis

- (pgs. 123-124)
- Acute inflammation of the bone and bone marrow
  - Most commonly the result of a periapical abscess
  - May follow fracture of a bone
  - May result from a bacteremia

Acute Osteomyelitis (cont.)
Diagnosis of Acute Osteomyelitis

- **Diagnosis**
  - Identification of the causative organism is based on culture results.
  - Treatment is based on antibiotic sensitivity testing.

Treatment and Prognosis of Acute Osteomyelitis

- (pg. 123)
  - Drainage of the area
  - Appropriate antibiotics

Chronic Osteomyelitis

- (pgs. 123-124)
  - A long standing inflammation of bone
  - The involved bone is painful and swollen.
  - Radiographs reveal a diffuse and irregular radiolucency that can eventually become opaque.
  - Known as chronic sclerosing osteomyelitis when radiopacity develops

Diagnosis of Chronic Osteomyelitis

- (pg. 124)
  - Biopsy results and histologic examination that show chronic inflammation of bone and marrow

Treatment of Chronic Osteomyelitis

- (pg. 124)
  - Debridement
  - Administration of systemic antibiotics
  - Some patients may require hyperbaric treatment.
Fungal Infections
• Candidiasis
• Deep fungal infections
• Mucormycosis

Candidiasis
➢ (pgs. 124-127)
• The outcome of an overgrowth of Candida albicans
  ➢ This can result from many different conditions.
    • Antibiotics, cancer chemotherapy, corticosteroid therapy, dentures, diabetes mellitus, HIV infection, hypoparathyroidism, infancy, multiple myeloma, primary T-lymphocyte deficiency, xerostomia
  ➢ The organisms can be identified in a scraping of the lesion.

Candidiasis (cont.)
➢ (pgs. 124-127)
• Types
  ➢ Pseudomembranous candidiasis
  ➢ Erythematous candidiasis
  ➢ Denture stomatitis
  ➢ Chronic hyperplastic candidiasis
  ➢ Angular cheilitis
  ➢ Chronic mucocutaneous candidiasis
  ➢ Median rhomboid glossitis

Pseudomembranous Candidiasis
➢ (pg. 125)
• A white curdlike material is present on the mucosal surface.
  ➢ The mucosa is erythematous underneath.
  ➢ The patient may complain of a burning sensation and/or a metallic taste.

Erythematous Candidiasis
➢ (pg. 125)
• The presenting complaint is an erythematous, often painful mucosa.
  ➢ May be localized to one area of oral mucosa or be more generalized
Erythematous Candidiasis (cont.)

- Denture Stomatitis (Chronic Atrophic Candidiasis)
  - (pgs. 125-126)
  - The most common type of candidiasis
  - The mucosa is erythematous, but the change is limited to the mucosa covered by a full or partial denture.
  - The pattern follows the outline of the RPD or denture.
  - Usually asymptomatic

Denture Stomatitis (Chronic Atrophic Candidiasis) (cont.)

- Chronic Hyperplastic Candidiasis (Candidal Leukoplakia)
  - (pgs. 125-126)
  - A white lesion that does not wipe off the mucosa
  - It will respond to antifungal medication.
  - A lesion that does not respond to antifungal medication should be biopsied.

Chronic Hyperplastic Candidiasis (Candidal Leukoplakia) (cont.)

- Angular Cheilitis
  - (pg. 126)
  - Erythema or fissuring at the labial commissures
  - Most commonly from Candida, but may be caused by other factors such as nutritional deficiency.
Angular Cheilitis (cont.)

Candidiasis

- A severe form that usually occurs in patients who are severely immunocompromised
- The patient has chronic oral and genital mucosal candidiasis and skin lesions as well.

Chronic Mucocutaneous Candidiasis

- A severe form that usually occurs in patients who are severely immunocompromised
- The patient has chronic oral and genital mucosal candidiasis and skin lesions as well.

Median Rhomboid Glossitis

- An erythematous, often rhomboid shaped, flat to raised area on the midline of the posterior dorsal tongue
- *Candida* has been identified in some lesions, and some lesions disappear with antifungal treatment.
- The response is not consistent, though.

Diagnosis and Treatment of Median Rhomboid Glossitis

- Diagnosis and treatment
  - A mucosal smear is obtained and sent to the laboratory for staining and examination.
  - In some patients, candidiasis is persistent and recurrent.
  - It may be a sign of a severe underlying medical problem.
Deep Fungal Infections

- Oral lesions may be caused by deep fungal infections such as histoplasmosis, coccidioidomycosis, blastomycosis, and cryptococcosis.
- They all primarily involve the lungs.
- There is a regional distribution of these lesions.

Diagnosis of Deep Fungal Infections

- Made by biopsy and microscopic examination
- Oral lesions are preceded by involvement of the lungs.
- Oral lesions are chronic, nonhealing ulcers that can resemble squamous cell carcinoma.

Treatment of Deep Fungal Infections

- Systemic antifungal medications such as amphotericin B, ketoconazole, or itraconazole
- Latent infections may remain following treatment and reappear if the immune system becomes deficient.

Mucormycosis

- A rare fungal infection
- The organism is commonly found in soil and usually is nonpathogenic.
- Infection may occur with diabetic and debilitated patients.
- The disease can present as a proliferating or destructive mass in the maxilla.

Viral Infections

- Human Papillomavirus Infection
- Herpes Simplex Infection
- Varicella-Zoster Virus
- Epstein-Barr Virus
- Coxsackievirus Infections

Human Papillomavirus Infection

- Verruca Vulgaris
- Condyloma Acuminatum
- Focal Epithelial Hyperplasia
Human Papillomavirus Infection (cont.)

- More than 100 types of human papillomavirus (HPV) have been identified.
- Several have been identified in oral lesions and some in normal oral mucosa.
- Also implicated in neoplasia

Verruca Vulgaris (Common Wart)

- A papillary oral lesion caused by a papillomavirus.
- Usually transmitted from skin to oral mucosa
- Autoinoculation usually occurs through finger sucking or fingernail biting.
- Usually a while, papillary, exophytic lesion that closely resembles a papilloma

Verruca Vulgaris (Common Wart) (cont.)

- Biopsy and histologic examination reveal the light microscopic features of this lesion.
- Immunologic staining may help identify viruses.

Diagnosis of Verruca Vulgaris

- Biopsy and histologic examination reveal the light microscopic features of this lesion.
- Immunologic staining may help identify viruses.

Treatment and Prognosis of Verruca Vulgaris

- Conservative surgical excision
- Lesion may recur
- Patients with finger lesions should refrain from finger sucking or fingernail biting to prevent reinoculation.

Condyloma Acuminatum

- A benign papillary lesion caused by a papillomavirus
  - Generally transmitted by sexual contact
  - May be transmitted to the oral cavity through oral-genital contact or self-inoculation
  - Papillary, bulbous pink masses that can occur anywhere in the oral mucosa
  - Multiple lesions may be present.
- Treatment
  - Conservative surgical excision
  - Recurrence is common.
Condyloma Acuminatum (cont.)

Focal Epithelial Hyperplasia (Heck Disease)

- Characterized by the presence of multiple whitish to pale pink nodules distributed throughout oral mucosa
- Most common in children
- Lesions are generally asymptomatic and do not require treatment.
- Resolve spontaneously within a few weeks

Focal Epithelial Hyperplasia (Heck Disease) (cont.)

Herpes Simplex Infection

- There are two major forms of herpes simplex viruses – type 1 and type 2
- Oral infections are mostly caused by type 1 and genital infections are most commonly caused by type 2
- Herpes simplex is one of a group of viruses called human herpes viruses (HHV).

Primary Herpetic Gingivostomatitis

- The oral disease caused by initial infection with herpes simplex virus
  - Painful, erythematous, and swollen gingiva and multiple tiny vesicles on perioral skin, vermillion border of lips, and oral mucosa may be seen.
  - The vesicles progress to form ulcers.
  - The patient may have systemic symptoms such as fever, malaise, and cervical lymphadenopathy.
- Most commonly occurs in children between 6 months and 6 years of age
- The majority of infections are thought to be subclinical.
Recurrent Herpes Simplex Infection

- The virus tends to persist in a latent state.
- Usually in nerve tissue of the trigeminal ganglion
- It is estimated that one third to one half of the population in the United States experiences recurrent herpes simplex infection.

Recurrent Herpes Simplex Infection (cont.)

- The most common location for recurrent infection is on the lips – herpes labialis.
- Also called a cold sore or fever blister
- Episodes may be stimulated by stress.
- May be sunlight, menstruation, fatigue, fever, and emotional stress

Recurrent Herpes Simplex Infection (cont.)

- Occurs intraorally on keratinized mucosa that is attached to bone
- Painful groups of small vesicles that ulcerate and coalesce to form a single ulcer with an irregular border
- The patient may have a prodrome with symptoms such as pain, burning, or tingling.

Recurrent Herpes Simplex Infection (cont.)

- Transmitted by direct contact with an infected individual
- The primary infection occurs at the site of inoculation.
- The amount of virus is highest in the vesicle stage.
- Herpetic whitlow
- A painful infection of the fingers due to a primary or secondary infection
- Herpes simplex can also cause an eye infection.
Recurrent Herpes Simplex Infection (cont.)

Diagnosis of Recurrent Herpes Simplex Infection (cont.)

- Generally based on clinical appearance
- Changes in epithelial cells can be seen microscopically.

Treatment of Recurrent Herpes Simplex Infection

- Antiviral drugs where appropriate
- These drugs have not been shown to be consistently effective in treating lesions except in immunocompromised patients.

Varicella-Zoster Virus

- Causes both chickenpox (varicella) and herpes zoster (shingles)
- Respiratory aerosols and contact with secretions from skin lesions transmit the virus.
Chickenpox

- A highly contagious disease
- Causes vesicular and pustular eruptions of skin and mucous membranes
- Systemic symptoms include headache, fever, and malaise.
- Usually occurs in children

Herpes Zoster (Shingles)

- Secondary chickenpox in an adult
  - Characterized by a unilateral, painful eruption of vesicles along the distribution of a sensory nerve
  - Any branch of the trigeminal nerve may be involved if lesions affect the face.
  - Vesicles are often preceded by pain, burning, or paresthesia.
  - The disease usually lasts for several weeks.
  - Neuralgia may take months to resolve.

Diagnosis of Varicella Zoster

- Generally made based on clinical features
  - Biopsy or smear may show the same type of virally altered epithelial cells seen in herpes simplex infection.
Treatment of Varicella Zoster

- Varicella generally is treated with supportive care.
- Antiviral drugs may be used for immunocompromised patients and for patients with herpes zoster.

Epstein-Barr Virus Infection

- Implicated in several diseases, including infectious mononucleosis, nasopharyngeal carcinoma, Burkitt lymphoma, and hairy leukoplakia.

Infectious Mononucleosis

- Characterized by sore throat, fever, generalized lymphadenopathy, enlarged spleen, malaise, and fatigue.
- Petechiae may appear on the palate.
- In the United States, infectious mononucleosis occurs primarily among adolescents and young adults.
- Often transmitted by kissing.

Hairy Leukoplakia

- An irregular, corrugated, white lesion most commonly occurring on the lateral border of the tongue.
- Epstein-Barr virus (EBV) is considered to be the cause of the lesion.
- It occurs most commonly in patients infected with HIV but has also been reported in patients who are not infected with HIV.

Hairy Leukoplakia (cont.)

Coxsackievirus Infections

- Causes several different infectious diseases.
- May be transmitted by fecal-oral contamination, saliva, and respiratory droplets.
- Three have distinctive oral lesions:
  - Herpangina
  - Hand-foot-and-mouth disease
  - Acute lymphonodular pharyngitis
Herpangina

- Characterized by fever, malaise, sore throat, and difficult swallowing (dysphagia)
- Includes vesicles on the soft palate
- Erythematous pharyngitis
- Resolves in less than 1 week without treatment.

Hand-Foot-and-Mouth Disease

- Usually occurs in epidemics in children less than 5 years old
- Multiple macules or papules occur on the skin, typically on feet, toes, hands, and fingers.
- Oral lesions are painful vesicles that can occur anywhere in the mouth.
- Resolves within 2 weeks

Diagnosis and Treatment of Hand-Foot-and-Mouth Disease

- Diagnosis
  - The distribution of skin lesions and mild systemic symptoms help differentiate the condition from herpes simplex infection.
- Treatment
  - Generally not required

Acute Lymphonodular Pharyngitis

- Characterized by fever, sore throat, and mild headache
- Hyperplastic lymphoid tissue of the soft palate or tonsillar pillars appears as yellowish or dark pink nodules.
- Lasts several days to 2 weeks and does not usually require treatment

Other Viral Infections That May Have Oral Manifestations

- Measles
  - Caused by a type of virus called a paramyxovirus
  - A highly contagious disease causing systemic symptoms and a skin rash
  - Koplik spots may occur in the oral cavity.
  - They are small erythematous macules.
- Mumps
  - A viral infection of the salivary glands
  - Most commonly causes bilateral swelling of the parotid glands
Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS)

- The virus is transmitted by:
  - Sexual contact with an infected person
  - Contact with infected blood and blood products
  - Infected mothers to their infants
- Infects cells of the immune system, particularly CD4 T-helper lymphocytes
  - This lymphocyte participates in cell-mediated immunity and in regulating the immune response.

The Spectrum of HIV

- Many individuals experience an acute disease shortly after infection with HIV, but others are asymptomatic.
- Infected individuals may not have any signs or symptoms of disease for some time, but in most patients a progressive immunodeficiency develops.
- As the immune system becomes deficient, life-threatening opportunistic infections and cancers occur.

Diagnosing AIDS

- The current definition includes HIV infection with severe CD4 lymphocyte depletion.
  - < 200 CD4 lymphocytes per microliter of blood
  - Normal level is between 550 and 1000

HIV Testing

- Two antibody tests are used to determine if a person is infected.
  - ELISA (enzyme-linked immunosorbent assay) is used first.
  - When this test is positive twice, it is followed by the Western blot test.

Clinical Manifestations of AIDS

- An initial infection may be asymptomatic.
- Some people may develop lymphadenopathy.
- Others may develop an acute illness resembling mononucleosis.
- Following an acute illness, some individuals may have persistent lymphadenopathy.
- Many become completely asymptomatic.

Clinical Manifestations of AIDS (cont.)

- The virus infects cells of the immune system.
  - In time, the immune system becomes deficient.
- AIDS-related complex is the occurrence of several signs and symptoms together.
  - These may include oral candidiasis, fatigue, weight loss, and lymphadenopathy.
Clinical Manifestations of AIDS

- Antibodies to HIV usually begin to become detectable about 6 weeks following infection.
  - In some people, antibodies may not be detectable for 6 months or up to a year or longer.
  - This is called the “window of infectivity.”

- The spectrum of HIV infection includes everything from an asymptomatic infection to “full blown” AIDS.
  - HIV
    - Human immunodeficiency virus
  - AIDS
    - Acquired immunodeficiency syndrome

Medical Management of AIDS

- Tests such as PCR are used to measure the amount of HIV circulating in serum.
  - The measured amount is called the viral load.
- Measurement of the viral load along with the CD4 lymphocyte count is used to assess HIV infection.
- Patients are managed with combinations of antiretroviral drugs and drugs used to treat opportunistic infections.

Oral Manifestations of AIDS (cont.)

- Many oral lesions are associated with patients with HIV infection and AIDS.
- Some lesions indicate developing immunodeficiency and predict AIDS in patients who are HIV positive.
- Oral lesions develop due to deficiency in CMI and depletion of T-helper cells.
- Oral lesions include opportunistic infections, tumors, and autoimmune-like diseases.
Oral Candidiasis (Thrush)

- All different types may occur.
- Topical and systemic antifungal treatment may be used.
- Recurrence is common.
- In HIV-positive patients, it generally signals the beginning of progressively severe immunodeficiency.

Herpes Simplex Infection

- When the immune system becomes deficient the infection appears as persistent, superficial, painful ulcers that may be located anywhere in the oral cavity.
- An ulceration due to herpes simplex that has been present for more than 1 month "meets the criteria for the diagnosis of AIDS."

Herpes Zoster

- Generally follows the usual pattern when it occurs in a person who is HIV positive
  - In the facial and oral area, the lesions follow branches of the trigeminal nerve.
  - It is a sign of developing immunodeficiency.

Hairy Leukoplakia

- Caused by Epstein-Barr virus
  - Most cases are an oral manifestation of HIV virus, but it is not always the case
  - It almost always occurs on the lateral borders of the tongue, where it appears as an irregular, white lesion with a corrugated surface.
  - Chronic tongue chewing and hyperplastic candidiasis can resemble the lesion.
- EBV is the most reliable method of diagnosis
- Treatment
  - Generally, it is not treated
  - It is a predictor of AIDS in HIV-positive individuals.
Hairy Leukoplakia (cont.)

Human Papillomavirus Infections (HPV) (cont.)

- Papillary oral lesions from several different papillomaviruses have been described in persons with HIV infection.
  - May have normal color or be erythematous
  - May be persistent and occur in multiple oral locations
  - May be associated with antiretroviral treatment

Kaposi Sarcoma (cont.)

Lymphoma

- An opportunistic neoplasm that may occur in patients with HIV infection.
  - Oral lesions appear as reddish-purple, flat or raised lesions
  - May be seen anywhere in the oral cavity, most commonly on the palate and gingiva

- Diagnosis
  - Biopsy

- Treatment
  - Surgical excision, radiation treatment, chemotherapy

- A malignant tumor that may occur in association with HIV infection.
  - Appears as a nonulcerated, necrotic, or ulcerated mass
  - May be surfaced by ulcerated or normal-colored erythematous mucosa

- Diagnosis
  - Biopsy and histologic examination

- Treatment
  - Chemotherapeutic drugs
Lymphoma (cont.)

Gingival and Periodontal Disease

- Unusual forms of gingival and periodontal disease may develop
  - Linear gingival erythema (LGE)
  - Necrotizing ulcerative periodontitis (NUP)

Gingival and Periodontal Disease (cont.)

Linear Gingival Erythema (LGE)

- Three characteristic features
  - Spontaneous bleeding
  - Punctate or petechial-like lesions on attached gingiva and alveolar mucosa
  - A bandlike erythema of the gingiva that does not respond to therapy
- LGE occurs independently of oral hygiene status.

Necrotizing Ulcerative Periodontitis (NUP)

- Characterized by intense erythema and extremely rapid bone loss
  - Necrotizing stomatitis
  - Extensive focal areas of bone loss along with features of NUP

Gingival and Periodontal Disease

- Treatment
  - Scaling, root planing, soft tissue curettage
  - Intracuticular lavage, chlorhexidine mouthrinse, systemic metronidazole
**Spontaneous Gingival Bleeding**

- A decrease in platelets may occasionally be seen in patients with HIV.
- Due to an autoimmune type of thrombocytopenic purpura
- In these patients, “a platelet count and bleeding time should be considered before deep scaling procedures.”

**Aphthous Ulcers**

- There appears to be an increase in the number of these ulcers in patients with HIV infection.
- Ulcers resembling major aphthous ulcers appear as deep, persistent, painful ulcers.
- They respond to steroids.

**Aphthous Ulcers (cont.)**

- Ulcers resembling major aphthous ulcers appear as deep, persistent, painful ulcers.
- They respond to steroids.

**Salivary Gland Disease**

- Bilateral parotid gland enlargement may occur in patients who are HIV positive.
- May be related to medication or salivary gland disease

**Salivary Gland Disease (cont.)**

- Macular areas of melanin pigmentation may occur in patients with HIV infection.
- The cause is unclear.

**Mucosal Melanin Pigmentation**

- Macular areas of melanin pigmentation may occur in patients with HIV infection.
- The cause is unclear.
Discussion Questions

- What is impetigo?
- What organism causes syphilis?
- What are the different forms of Candida?
- What is a wart?
- What causes mononucleosis?
- What is the difference between HIV and AIDS?