SDL - Oral Infections

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Oral Infections

- Bacterial
  - NUG
  - Syphiiis
  - Tuberculosis
  - Actinomycosis
  - Other
- Fungal
  - Oral candidiasis
  - Histoplasmosis
- Viral
  - Human herpes virus (1-8)
  - Mumps
  - HIV

What is Necrotising Ulcerative Gingivitis (NUG)?

Necrotising ulcerative gingivitis, commonly known as trench mouth, is a non-contagious infection of the gingiva. The main signs and symptoms include painful bleeding gingiva and ulceration of the interdental papillae.

Necrotising Ulcerative Gingivitis (NUG)

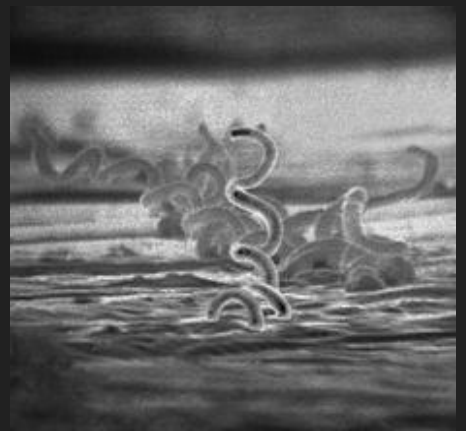
- The SDL provides detail about the cause, presentation and management of NUG
- Diagnosis and prognosis were not thoroughly explored

Diagnosis
- OPG
- Lymph node palpation
- Blood test
- Microscopic examination

Prognisis
- Responds well to treatment
- Potential tooth and bone loss

Syphilis

- Overall the information provided in the lecture is sufficient
- Data on prevalence in Australia
- Information on diagnosis and associated tests (specific and non-specific)
  - VDRL, FTA-ABS, THPA, ELISA



Prevalence Data

- 1,292 confirmed cases (2009)
- 10% ATSI, 86% Non ATSI
- Prevalence trebled between 2005-2009 from 2-6/100,000
- 116 cases of congenital Syphilis (2009)
- congenital infection in 2/3 of cases of maternal infection

Actinomycosis

Cause

- Chronic suppurative infection caused by a filamentous branching gram +ve anaerobic bacteria (**actinomyces israelli**).
- These bacteria are common in the mouth
- Injuries (esp extractions) can sometimes provide a pathway and sometimes precede infection.
- Men are predominantly affected (usually 30-60 years of age).

Presentation

- Chronic soft tissue swelling usually near the angle of the jaw and upper neck
- The swelling is dusky-red or purplish, firm and slightly tender
- Suppurative discharge of yellowish fleck (called sulfur granules)
- Often difficulty in opening the mouth, but minimal pain
- Healing normally leads to scarring and puckering of the skin

Actinomycosis

Diagnosis

- Diagnosis by culture showing colonies surrounded by Polymorphs

Management

- Penicillin (for 4-6 weeks or longer)
- Abscesses should be drained surgically as they form
- Erythromycin can be given to patients allergic to penicillin

Tuberculosis

Cause

- Chronic infectious disease (Mycobacterium tuberculosis)
- Primary infections usually asymptomatic and located at apex of lungs

Presentation

- Ulcer on the mid-dorsum of the tongue
- The ulcer is typically angular or stellate, with over hanging edges and a pale floor but it can be ragged or irregular
- Painless at early stages and regional lymph nodes are unaffected

Management

- Treatment - Multi agent (isoniazid, rifampin, pyrazinamide)

Cat Scratch Disease

Cause

- *Bartonella henselae or Rochalimaea henselae* typically entering through a bite or scratch.

Presentation

- Formation of a papule, which may suppurate, at the site of inoculation
- Mild fever, malaise and regional lymphadenitis 1-3 weeks after exposure.
- Lymph nodes soften and typically suppurate.

Diagnosis

- Usually clinically and by exclusion of other causes of lymphadenopathy

Management

- Self limiting but persistent lesions may need excision.
- Trimethoprim-sulphamethoxazole sometimes recommended.

Histoplasmosis

Cause

- *Infection by Histoplasma capsulatum* (as with candida it is dimorphic).
- Most prevalent endemic fungal infection in North America.

Presentation

- Patients normally asymptomatic or minimally symptomatic infection an do not seek medical attention.
- Most oral lesions occur with disseminated histoplasmosis (other types are ; Acute and chronic) especially the tongue, palate and buccal mucosa (solitary painful ulcer).

Diagnosis

- Histoplasmin skin tests are no longer used clinically and are not commercially available.
- Radiographs may show splenic or pulmonary calcifications, lung nodules, or mediastinal abnormalities

Management

- Ampotericin B

(Knox, K., & Hage, C. (2010). Histoplasmosis. Proceedings of the American Thoracic Society, 7(3), 169-72.)

Candidosis

- Infection by fungal pathogen *Candida albicans* – however other species of the *Candida* family may also be implicated
- Pathogenesis involves an opportunistic infection – the pathogen is usually harmless, existing in the oral microflora as a commensal organism, however transitions to opportunistic pathogen following a disturbance that is usually associated to predisposing factors rather than virulence factors

Predisposing Factors

Local factors	• **Denture wearing especially associated with poor denture hygiene and continued use overnight while sleeping** • **Smoking** • **Pregnancy**
Age	• Extremes of age – decreased immunity
Drug therapy	• Broad spectrum antibiotics – disturbs oral microflora by eliminating competition for dietary substrate and adhesion to oral mucosa • Immunosuppressant agents, inhaled/topical/systemic corticosteroids – depresses the immune response; may also predispose patient to xerostomia • Xerogenic agents – e.g. anticholinergics, antidepressants, antipsychotics, antihypertensives – salivary hypofunction causing reduced immunity by inability to physically flush away or chemically destroy (by lysozyme, immunoglobulin action) the microorganism
Xerostomia	• Sjogren's syndrome • Xerogenic agents • Radiation therapy causing destruction of salivary glands • Graft vs. host disease • Prolonged dehydration
Systemic disease	• HIV – occurs in >60% of HIV-infected patients and >80% of AIDS patients • Endocrine disorders – diabetes which is uncontrolled amplifies salivary complications (reduced flow, reduced pH, increased glucose levels) • Malignancy – treatment by cytotoxic agents impairs the immune response

Common Presentations

- Acute candidosis
  - Acute pseudomembranous candidosis ('thrush')
  - Acute atrophic candidosis: acute antibiotic stomatitis
- Chronic candidosis
  - Chronic atrophic candidosis: (a) denture-induced stomatitis, (b) angular chelitis, (c) median rhomboid glossitis
  - Chronic hyperplastic candidosis/candidal leukoplakia
  - Chronic mucocutaneous candidosis
  - Erythematous candidosis

Common Presentations: Acute Candidosis

- Acute pseudomembranous candidosis ('thrush')
- 'Milk curd' creamy white patches which are wiped off to reveal an erythematous affected mucosa; may have a burning sensation and foil taste
- Common sites: buccal mucosa, tongue, palate
- Dx: based on characteristic appearance of lesion; confirm dx by smear with periodic acid-Schiff (PAS) stain showing large masses of tangled hyphae, detached epithelial cells and leucocytes
- Mx: address predisposing factors; antifungal medication such as nystatin or amphotericin

Common Presentations: Acute Candidosis

- Acute atrophic candidosis
- Acute antibiotic stomatitis – a common manifestation of acute atrophic candidosis
- Usually follows overuse or topical oral use of antibiotics, which suppresses normal competing microflora
- Clinically appears as red erythematous mucosa; flecks of thrush may be present
- Mx: removal of antibiotics; resolution may be accelerated by use of topical antifungals

Common Presentations: Chronic Candidosis

Chronic atrophic candidosis:

A) Denture-induced stomatitis

- Clinically, appears as diffuse inflamed and erythematous mucosa sharply limited to the maxillary denture bearing area; not commonly associated with mandibular dentures; often associated with angular chelitis
- Dx: inflamed area coincident with denture base and pt habits regarding denture hygiene; confirm dx by smear of inflamed mucosa and/or fitting surface of denture with gram staining showing candidal hyphae
- Mx:
  - Address predisposing factors
  - Denture hygiene: (a) 2x daily brushing of denture with toothbrush and soap, (b) advise pt leave denture out at night and place in a dry environment (c) 2x weekly soaking for 15-30mins in white vinegar (diluted 1:20), 0.1% hypochlorite solution (diluted Milton's solution), or chlorhexidine solution – note that long term use of chlorhexidine may cause discoloration of denture
  - Antifungal therapy

Common Presentations: Chronic Candidosis

Chronic atrophic candidosis:

B) Angular chelitis

- Erythematous skin plaque usually with formation of fissures at one or both corners of the mouth and has an irritated, raw feeling
- Majority of cases are usually co-infection by *Candida* with *staphylococci* and *streptococci*
- Aetiological cofactors: atopic and seborrheic dermatitis, nutritional deficiency (iron, vitamin B12, folate), denture wear especially due to reduced vertical dimension
- Dx: pt presentation and history
- Mx: address predisposing factors and antifungal therapy; treat oral candidosis if present

Common Presentations: Chronic Candidosis

Chronic atrophic candidosis:

C) Median rhomboid glossitis/central papillary atrophy

- Erythematous patches of atrophic papillae located in the central area of the dorsum of the tongue at the junction between the hard and soft palate – usually pink/red in colour however candidal infection may be superimposed to cause the lesion to be white; typically asymptomatic
- Dx: clinical appearance; biopsy may be indicated to exclude other lesions/confirm dx
- Mx: address predisposing factors; antifungal therapy

Common Presentations: Chronic Candidosis

Chronic hyperplastic candidosis/candidal leukoplakia

- Thick, irregular white plaques that are not easily removable, commonly affecting the dorsum of the tongue and post-commissural buccal mucosa; potentially malignant lesion
- Dx: histological confirmation by gram staining or periodic acid-Schiff (PAS) stain showing candidal hypae embedded in clumps of detached epithelial cells
- Mx: address predisposing factors; vigorous antifungal therapy (e.g. fluconazole continued for several months)

Common Presentations: Chronic Candidosis

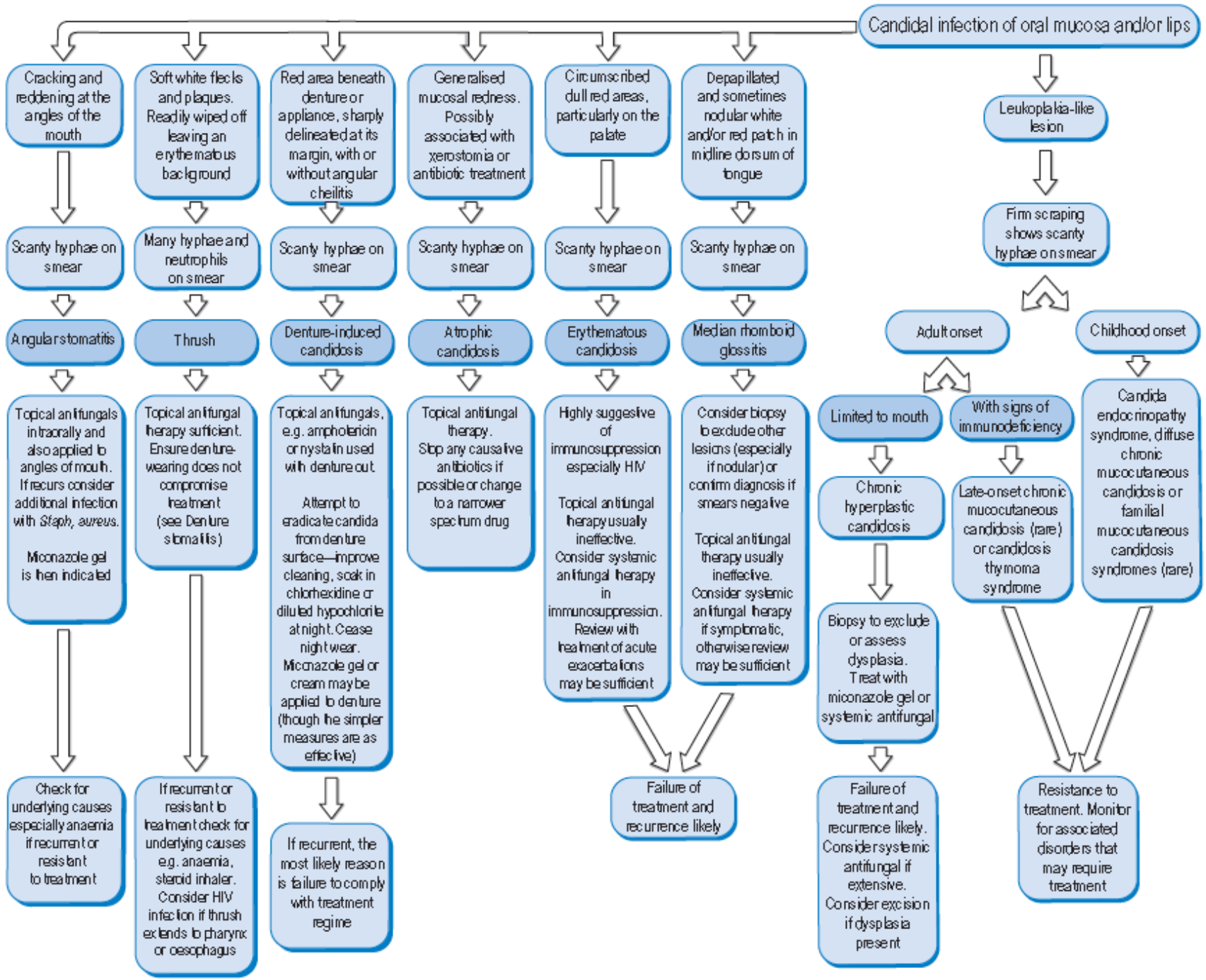
Chronic mucocutaneous candidosis

- A group of rare syndromes where there is persistent infection with *Candida* as a result of a defect in cell-mediated immunity
- Clinically appears as: hyperplastic mucocutaneous lesions, localised granulomas, and adherent white plaques on affect mucosa
- Four types:
  - Familial – rare, autosomal recessive trait characterised by onset of chronic mucocutaneous candidosis in infancy or early childhood
  - Diffuse-type – randomly occurring cases of severe mucocutaneous candidosis with widespread warty and overgrowth of skin; patients also abnormally susceptible to opportunistic bacterial and fungal infection
  - Endocrine candidosis syndrome
  - Late-onset
- Dx: histological confirmation, however precise categorisation may need to be delayed as per development of other associated symptoms
- Mx: antifungal therapy and address associated systemic disorders as necessary

Common Presentations: Chronic Candidosis

Erythematous candidosis

- Patchy red mucosal macules commonly on hard palate, dorsum of tongue, soft palate (in order of frequency); burning sensation may be present
- Sub-types of erythematous candidosis: denture-induced, angular chelitis, median rhomboid glossitis
- Tx: itraconazole usually effective



Summary Chart

Cawson, R. A., Odell, E. W. (2008). *Cawson's Essentials of Oral Pathology and Oral Medicine* (8th ed.). Edinburgh: Churchill Livingstone

Pg 218 – 12.1: summary of the types of oral cnadidal infection and their management

Management of Candidosis

Confirm diagnosis with smear (most types) or biopsy (chronic hyperplastic candidosis) unless presentation is typical

Check history for predisposing causes which may require treatment

If candidosis is recurrent or not responsive to treatment, test for anaemia, folate and vitamin B_{12} deficiency and perform a urine test for diabetes

If a denture is worn:

- Stop night-time wear
- Check denture hygiene and advise
- Soak denture overnight in antifungal (dilute hypochlorite, chlorhexidine mouthwash) or, less effective, apply miconazole gel to denture fit surface while worn

If a steroid inhaler is used, check it is being used correctly, preferably with a spacer. Advise to rinse mouth out after use

Drug treatments

Presentation	Generalised acute or chronic	Chronic hyperplastic form	Angular stomatitis	Immunosuppression or otherwise resistant to treatment*
Drug of choice and regime	Nystatin 100000 units QDS for 7–10 days as suspension or pastilles *or* amphotericin 10 mg QDS as lozenges or suspension 10–14 days	Miconazole gel 24 mg/ml. Apply QDS	Apply miconazole gel 24 mg/ml QDS to the angles of the mouth 10 days or fusidic acid cream	Consider fluconazole 50 mg/day for 7–14 days (longer in immunosuppression) or itraconazole
Notes	Amphotericin is generally preferred over nystatin which has an unpleasant taste	Only effective if lesion accessible for application. For recurrent infection in white patches fluconazole may be required simultaneously	Must treat intraoral infection simultaneously. This is always present even if not evident	Itraconazole (100 mg/day for 14 days) has a higher risk of adverse effects
Cautions	Neither has any significant unwanted effects	Significant doses may be absorbed if applied to denture fit surface. Avoid in pregnancy. Potentiates warfarin anticoagulation, numerous other but less frequent effects	No adverse effects if only small amounts are applied as described above	Avoid in pregnancy and renal disease. Numerous drug interactions possible

If there is conspicuous papillary hyperplasia of the palate, consider treatment (cryosurgery or excision) after treatment when inflammation has subsided. The irregular surface predisposes to recurrence of candidosis.

*Candidal resistance to azole drugs is possible but failure of treatment is more likely to result from non-compliance with local measures such as denture wear and cleaning or an untreated underlying condition

Cawson, R. A., Odell, E. W. (2008). *Cawson's Essentials of Oral Pathology and Oral Medicine* (8th ed.). Edinburgh: Churchill Livingstone

Pg. 217 – Treatment of Candidosis

Herpes Simplex Virus I

Primary (Herpatic Stomatitis)

- Early lesion – hard palate and dorsum of the tongue (dome shaped 2-3 mm diameter)
- Rupture of vesicles = sharply defined shallow ulcers with yellow/ greyish floor and red margins
- Vesicles are painful and interfere with eating
- Regional lymph nodes -- enlarged/ tender
- Oral lesion resolve within 1wk but malaise may continue for several months

Herpes Simplex Virus I

Secondary (Herpes Labialis)

- After primary infection (latent infection reactivated in 20-30% of patients = cold sores)
- Triggering factors = Common cold and other febrile infections/ exposure to strong sunshine/ menstruation/ local irritation such as dental treatment
- Vesicles from an hour after infection of site – clusters at mucocutaneous junctions of lip
- Vesicles enlarge and coalesce
- After 2-3 days rupture and crust over
- Generally heal without scarring

Human Herpes Virus III - Varicella Zoster

Primary infection: Chicken Pox

- Fever, Headache, malaise, loss of apatite
- A self limiting rash appears on body and sometimes mucosa
- Rash begins as macules then progresses to papules and then crusts over
- Crusts slough off after 1-2 weeks

Human Herpes Virus III - Varicella Zoster

Secondary infection: Herpes Zoster (Shingles)

- Begins with prodromal symptoms of pain, itching, paraesthesia in 1-3 dermatomes
- Later, unilateral maculopapular lesions appear on affected areas then soon become vesicles.
- Regional lymph node are tender and enlarged
- Pain continues until lesions crust/ start to heal

Herpes zoster of Trigeminal nerve

- Vesicles on 1 side of face and in the mouth up to the midline

- NOTE: patients sometimes unable to distinguish pain of trigeminal zoster and toothache

Others

HHV V: Cytomegalovirus

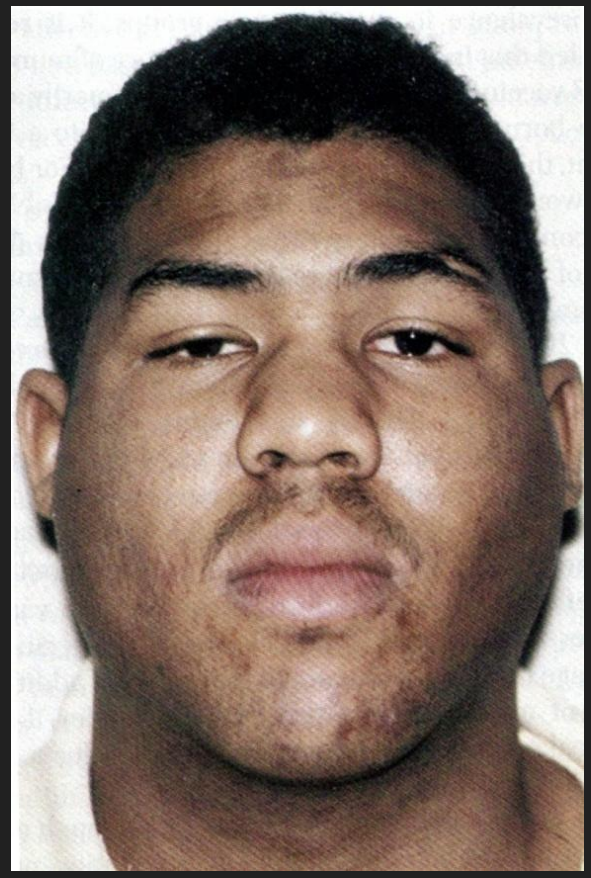
- 90% infections are asymptomatic
- Oral ulcers usually indistinguishable from RAS – usually Large shallow and single and affect either masticatory or non masticatory mucosa

HHV VIII: Kaposi Sarcoma

- Unusual vascular neoplasm - Palate most frequently affected
- Appearance: Purple area or nodule which bleeds readily

Epidemic Parotitis (Mumps)

- **Cause**
  - A virus that belongs the Paramyxovirus family
- **Symptoms**
  - Prodromal/early: fever, muscle pain, headache and malaise
  - Followed by painful swelling of the parotid glands (unilateral in 25% of cases)
  - Symptoms typically occur 16-18 days after exposure and resolve within 7-10 days.
- Mumps is highly contagious and spreads via respiratory droplets or direct contact with an infected person.
  - People are most infectious for the 3-4 days before and after the onset of symptoms.



Epidemic Parotitis (Mumps)

- Most common complication is painful testicular inflammation (epididymo-orchitis) in 15-40% cases of post pubertal males.
- **Treatment**
  - No available cure, hence treatment is supportive.
  - Application of intermittent heat or ice to any affected (neck/testicular) regions
  - Analgesics such as paracetamol for pain relief
- **Prevention**
  - Vaccination

HIV/AIDS

Cause

- Human Immunodeficiency Virus
- This virus attacks the cells in the immune system and causes decreased immune system function, eventually resulting in AIDS (acquired immune deficiency syndrome).
- Increased vulnerability to infections and diseases that the body is usually able to fight against.

Stages and symptoms

- Acute infection of the virus may cause influenza-like symptoms within 2-4 weeks of exposure.
  - Include but not limited to: lymphadenopathy, sore throat, fever, headache, malaise
- There is then a prolonged period without symptoms although transmission of the virus is still possible.
- AIDS stage
  - Development of one or more opportunistic illnesses OR the number of CD4 T cells falls below 200 cells/μL(normally between 500-1600)

HIV/AIDS

Diagnosis

- HIV testing is done with an enzyme immunoassay (EIA) test
  - Detects the presence of antibodies that the immune system has produced in response to HIV antigens.

Treatment

- There is no cure for HIV/AIDS but antiretroviral drug therapy can prevent or reduce any weakening of the immune system.
- This involves taken a combination of multiple antiretroviral drugs
  - Nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs)
  - Non-nucleoside reverse transcriptase inhibitors (NNRTIs)
  - Protease inhibitors
  - Fusion inhibitors
  - Integrase inhibitors

Match the picture to the disease

See next slide for list of diseases to choose from

a

b

c

d

e

f

g

h

Match-the-picture options

- Pseudomembranous Candidiasis
- Congenital syphilis
- NUG
- Median Rhomboid Glossitis
- Mumps
- Impetigo
- Herpes simplex virus I
- Kaposi's Sarcoma
- Actinomycosis
- Tuberculosis
- HHV 5

Match-the-picture answers

- A: Congenital syphilis
- B: Human Herpes Simplex virus I
- C: NUG
- D: Mumps
- E: Pseudomembranous Candidiasis
- F: Impetigo
- G: Kaposi's Sarcoma
- H: Median Rhomboid Glossitis

MCQ

1. Which infection results in ulcerations which are indistinguishable from RAS?

- a) HHV 1
- b) Impetigo
- c) HIV
- d) HHV 5
- e) Tuberculosis

2. Which infection has a latent infection which reactivates in 20-30% of individuals?

- a) Actinomycosis
- b) Mumps
- c) HHV 1
- d) HIV
- e) HHV 3

3. Stress, immunosuppression, poor OH, poor nutrition, local trauma and inadequate sleep are predisposing factors of which disease?

- a) Syphilis
- b) Tuberculosis
- c) NUG
- d) Mumps
- e) HHV III

4. Why is stress is a predisposing factor for NUG?

- a) Causes poor absorption in the GI tract
- b) Stress related corticosteroid hormone alters the T lymphocyte ratio
- c) Reduces the action of salivary glands to produce saliva
- d) Unmotivates the patient to practice OH
- e) Induces the activation of abnormal action potentials which causes inadequate sleep

5. Syphilis is proceeds through it's 3 stages in the following order?

- a) primary/secondary/tertiary
- b) chancre/disseminated/latent
- c) primary/latent/tertiary
- d) disseminated/latent/chancre
- e) both A and B

6. Which stage of syphilis is the most contagious?

- a) primary
- b) secondary
- c) latent
- d) chancre
- e) both A and D

7. In which scenario will be patient not be predisposed to candidal infection?

- a) Patient taking anticholinergic medication
- b) Patient is overweight
- c) Patient with uncontrolled diabetes
- d) Patient is asthmatic
- e) Patient has had previous radiation therapy to the head

8. How to corticosteroids increase susceptibility to candidal infection?

- a) Eliminates competing oral microflora
- b) Causes destruction of salivary glands, resulting in xerostomia
- c) Reduces lysozyme and immunoglobulin concentration in saliva
- d) Suppresses inflammatory response
- e) Provides substrate specific for only candida species

9. Actinomycosis is caused by actinomyces israelli. This is a _____ bacteria?

- a) Gram +ve anaerobic
- b) Gram +ve aerobic
- c) Gram -ve anaerobic
- d) Gram -ve aerobic

10. What pathogen is associated with Histoplasmosis?

- a) Histoplasma capsulatum
- b) Rochimallae Hensalea
- c) Histoplasma Guillermo
- d) Aggregatibacter actinomycetemcomitans

11. Which of the following is FALSE regarding mumps?

- a) It is an infectious disease
- b) Caused by a member of the Paramyxovirus family
- c) Always causes bilateral swelling of the parotid glands
- d) Can be prevented

12. Which of the following is TRUE regarding HIV/AIDS?

- a) It increases immune system function
- b) Treated using antifungals
- c) Caused by the Herpes Immunodeficiency Virus
- d) Cannot be cured

Answers on next slide

MCQ Answers

- 1. D
- 2. C
- 3. C
- 4. B
- 5. E
- 6. B
- 7. B
- 8. D
- 9. A
- 10. A
- 11. C
- 12. D