Review Article

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Infective Ulcers in the Oral Cavity: A Review

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Abstract

Oral ulcers, although very common entity can be very challenging to diagnose because of their broad spectrum in etiology and presentation. Oral mucosal ulcers range from ulcers due to local trauma to infections, malignancy and other systemic illness. Oral ulcers are diagnosed based on the patient's history, clinical appearance, site, duration and frequency and the underlying systemic condition. As the list of ulcerative lesions in the oral cavity is quite extensive, the focus here will be on the infective ulcerative lesions.

Keywords: Oral ulcers; Infective ulcer; Oral infection; Bacterial; Viral; Fungal.

Introduction

Ulcers are defined as a break or loss in the continuity of the surface epithelium or mucous membrane into the lamina propria.[1] Ulcers are common presenting sign of a wide spectrum of oral diseases. Ulcerative lesions may pose a unique diagnostic challenge due to overlap of clinical features between distinct types of ulcerated lesions.[2] Oral ulcer diagnosis are confirmed by the underlying systemic condition and the nature, site, duration and frequency.[1] Most ulcers of the oral mucosa divided into four categories: infection, immune related, traumatic, or neoplastic.[2] In this review ulcers of infective etiology discussed.

Infective ulcers of oral cavity

Oral ulcerative lesions due to infections may present diagnostic difficulties due to a wide potential range of non-specific symptoms and a lack of familiarity amongst health care providers with the symptoms and presentations of these uncommon diseases.[2]

Bacterial oral ulcers

Tuberculous ulcer

Tuberculosis (TB) is a chronic granulomatous infectious disease caused by Mycobacterium tuberculosis. Tuberculosis can either be primary or secondary and can affect any part of the body. The oral cavity is an uncommon site and majorly due to secondary infection.[1] These lesions manifest as nonhealing ulcers, nodules, fissures, verrucous proliferation, erythematous patches or plaques, indurated lesions, or as jaw lesions. The dorsum of the tongue is more common site and appears as undermined edges and a yellow granular base with minimal induration.[1]

Oral lesions follow lung lesions and affects gingiva, floor of the mouth, palate, lips, buccal folds, tooth sockets, and jaw bones. In primary TB, the ulcerative lesion is non-painful and the patient may have accompanied lymphadenopathy and most commonly seen in children. In secondary TB,

ulcers are painful with variable lymphadenopathy and are seen more commonly in adults.[2] TB ulcers are usually single; however, multiple lesions have been reported. The irregular ulcers may be superficial or deep and can be covered by necrotic tissue in center of lesion. The ulcers slowly increase in dimension and do not self-cure.[3] Tuberculosis is confirmed via various laboratory tests, cultures, microscopic examination, and molecular testing. Treatment consists of a combination of the anti-microbial drugs rifampin, isoniazid, pyrazinamide, and ethambutol.[2]

Syphilitic ulcer

Syphilis is a sexually transmitted disease caused by Treponema pallidum. Syphilis may be acquired or congenital. Acquired syphilis is classified as primary, secondary and tertiary. Primary and secondary cause ulcer.

Oral ulcer in the syphilis is the chancre, a highly infectious, non-specific ulceration which occurs in primary syphilis. In the oral cavity, the chancre typically presents as a deep, single ulcer with pain. The most common location is the lips, and the tongue, palate, or tonsillar region are less commonly affected. The patient may demonstrate associated cervical lymphadenopathy. Oral chancres typically involute in 3–8 weeks.[4,5]

Specific tests for IgM or IgG antibodies to T. pallidum should be administered in suspected primary syphilis. Histopathology is nonspecific and special stains such as Warthin-Starry may not be positive.[4] Treatment choice for syphilis is parenterally-delivered penicillin G, and most patients require only one dose.

Viral Oral Ulcers

Herpes simplex infection

Herpes simplex infection Herpes simplex, an acute infectious disease commonly affecting man, with exception of viral respiratory infections.[1] Two types of HSV: HSV - 1 & HSV – 2. Herpes simplex virus type 1 is the mostly associated in virus-induced recurrent oral ulceration.[3] However, with oral-genital contact, HSV type 2 may also be implicated in oral lesions. Both viruses transmit directly by contact with body fluids including saliva. Seen in keratinized mucosa. Herpes simplex viruses have been reported to penetrate keratinocytes rapidly, in less than 5 minutes, at temperatures as low as 7°C, through direct membrane fusion. Within few days, the mouth becomes sore and the inflamed gingiva appears as edematous and erythematous mainly affects lips, tongue, buccal mucosa, palate, pharynx and tonsils. Lesions constitutes of small vesicles with thin wall, surrounded by an inflammatory base. These vesicles rupture, forming shallow, oval-shaped distinct ulcers that are coated with greyish white or yellow plaque and encircled by an erythematous halo, causing excruciating pain. The ulcers may vary in size measuring millimeters or centimeter in diameter. ulcers heal spontaneously within 7 – 14 days and leave no scar.

Primary herpetic gingivostomatitis is more common in children and young adults, with a peak between 6 months and 5 years of age, and a second peak in the second decade. The initial oral manifestation of primary herpes simplex virus infection, when symptomatic, includes red gingiva and vesicles that will rupture into ulcers; systemically, headache, malaise, pharyngitis, fever, and cervical lymphadenopathy are notable. Treatment is primarily supportive and may include antivirals in severe cases.

The symptoms of primary HSV infection can be confused with those of other acute oral ulceration, such as hand, foot, and mouth disease or herpangina, which are typically encountered in children. Recurrent infection is experienced by 40% of patients and usually seen as herpes labial is on the vermilion border. Intraoral recurrences in immunocompetent individuals consist of ulcerations limited to the attached gingiva and hard palate. Lesions begin as a sequence of mild, painless ulcerations that can cluster and heal in as little as ten days. In immunosuppressed patients, recurrences may present on non-keratinized mucosa.[6,7,8] Diagnosis of HSV-1 is made according to clinical features. Primary infection can be treated with acyclovir rinses, while recurrent lesions are treated with over-the-counter topical 10% n-docosanol cream or systemic acyclovir, valacyclovir, or famciclovir.

Varicella Zoster virus

Varicella zoster virus is a causative microbe for chicken pox and herpes zoster (shingles) infections. The clinical expression of primary chicken pox may include nonspecific oral ulcers, itchy rash, fever, malaise, and lymphadenopathy.[9] The virus remains inactive in dorsal root ganglia until reactivation. Upon reactivation, prodromal symptoms occur, such as pain, and this is followed by appearance of vesicular rash. Lesions follow a dermatomal distribution and manifest as vesicles that eventually rupture, and reoccur as herpes zoster (shingles).[9]

Herpes zoster most commonly manifests the trunk; however, in up to 30% of the cases it manifests on the face or in the oral cavity along the course of the trigeminal nerve. In case of involvement of maxillary and mandibular branches intraoral lesions can be seen. Management includes antivirals, such as acyclovir, to decrease the time and the severity of the lesion, as well as to reduce painful complications; postherpetic neuralgia can be a significant in number of cases. Though varicella classically affects the skin, oral ulcerations may also occur in severe disease. They manifest as small vesicles which rapidly rupture to form shallow ulcerations and common sites are lips, buccal mucosa, and palate.[10,11]

Most commonly seen in winter and spring months. Transmission is through air-borne droplet or direct contact with active lesions.[1] Lasts 7-10 days. The lesion begins as 3- 4 mm, white, opaque vesicles that rupture and form ulcerations of 1 to 3 cm.[1]

Zoster affects older or immuno compromised patients. A prodromal stage of pain usually leads to visible lesions of the acute phase within few days. The acute phase's of oral symptoms begin as vesicles overlaying erythematous macules that ulcerate and crust during a 10-day period. These lesions are unilateral in distribution and affect both keratinized and non-keratinized mucosa. Postherpetic neuralgia may follow and cause immense pain which may last a year or longer. Diagnosis of VZV is usually made clinically. Supportive treatments are appropriate for varicella, while systemic antiviral therapy is beneficial in patients with zoster if given within 48 h.

Cytomegalovirus (CMV)

CMV is a member of the human herpesvirus family that uncommonly presents with oral ulcerations. These non-specific ulcerations occur in immunosuppressed patients, and most commonly affect the tongue, floor of mouth, and hard or soft palate. Histopathologic analysis of CMV-induced ulcerations can show enlarged endothelial cells or salivary duct epithelium.[9] Ganciclovir has been used as treatment of choice in immunocompromised patients.[12]

Fungal Ulcer

Fungal infections can cause oral ulcerations including Aspergillus fumigatus or Aspergillus flavus (aspergillosis), Blastomyces dermatidis (blastomycosis), Histoplasma capsulatum (histoplasmosis), Cryptococcus neoformans (cryptococcosis), Coccidioides immitis (coccidioidomycosis), and Paracoccidiodes brasiliensis (paracoccidiomycosis). Almost all these infections occur in disseminated forms in immunosuppressed individuals.[13] Ulcers of aspergillosis appear as black or yellow necrotic lesions which most commonly occur on the tongue or palate.[1]

Blastomycosis may present with oral ulcerative lesions which mimic squamous cell carcinoma. Lesions are erythematous, irregular, have rolled borders, and do not have any specific site in the oral cavity.[14] Ulcers of histoplasmosis are indurated with rolled borders and affects the tongue, gingiva, or palate.[15] Ulcers of cryptococcosis involve the palate, gingiva, or tonsillar pillars.[16]

The mucocutaneous form of paracoccidiomycosis may start as tiny vesicles which ulcerate and progress; they develop rolled borders and become painful with time passes. A non- specific palatal ulcer can be seen in the cases of Mucormycosis as a presenting sign of this rare disease.[17]

Conclusion

Ulcers of oral cavity are caused by various etiologic factors including infection, immune related, trauma, and neoplasms. Though careful medical history and clinical evaluation may lead to a strong clinical diagnosis in many cases and treatment can be provided on the time.

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