Review Article

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Diagnostic Characteristics of Common Acute Oral Ulcerative Lesions

Lalbahadur L Sadhu[1*] Tashveen Singh[2] Hiren Bhojak[3] Mitul Prajapati[4]

[1]MDS, Private Practitioner, Patan, Gujarat, India.
[2]MDS, Private Practitioner, Vadodara, Gujarat, India.
[3]Senior Lecturer, Department of Oral Pathology, Ahmedabad Dental College & Hospital, Gujarat, India.
[4]Senior Lecturer, Department of Oral Pathology, Ahmedabad Dental College & Hospital, Gujarat, India.

ABSTRACT

Background: Diagnosis holds the utmost importance for any treatment planning and an incorrect diagnosis can lead to adverse outcomes. Oral ulcerative lesions might be quite challenging to diagnose and differentiate basis on their clinical presentation. This review aims to introduce and establish an updated decision tree for its diagnosis based on the symptoms presented. Literature search was carried using specific keywords like “Oral lesions” “ulcerative” “Diagnosis”, etc. using Boolean apparatus. Various search engines and specialized databases were used including PubMed, PubMed Central, Medline Plus, EBSCO, Science Direct, Scopus, Embase, and authenticated textbooks were used to find relevant topics by means of MeSH keywords mentioned above. Finally, English articles published since 1995 to 2019 by medical and dental journals such as original research, meta-analysis, systematic reviews, case reports were apprised and categorized to different subgroups based on number and duration of lesions. In total 25 entities were organized in the form of decision tree in order to help clinicians establish a step wise logical diagnosis.

Keywords: Oral mucosal lesion, Acute oral lesions, diagnosis, decision tree.

INTRODUCTION

An ulcer is a sore on the skin or a mucous membrane, accompanied by the disintegration of tissue. Ulcers can result in complete loss of the epidermis and often portions of the dermis and even subcutaneous fat. Ulcers are most common on the skin of the lower extremities and in the gastrointestinal tract. An ulcer that appears on the skin is often visible as an inflamed tissue with an area of reddened skin.

A mouth ulcer is an ulcer that occurs on the mucous membrane of the oral cavity. [1] Mouth ulcers are very common, occurring in association with many diseases and by many different mechanisms, but usually there is no serious underlying cause. The two most common causes of oral ulceration are local trauma (e.g. rubbing from a sharp edge on a broken filling) and apthous stomatitis ("canker sores"), a condition characterized by recurrent formation of oral ulcers for largely unknown reasons. Mouth ulcers often cause pain and discomfort and may alter the person's choice of food while healing occurs (e.g. avoiding acidic or spicy foods and beverages). They may form individually or multiple ulcers may appear at once (a "crop" of ulcers). Once formed, the ulcer may be maintained by inflammation and/or secondary infection. Rarely, a mouth ulcer that does not heal may be a sign of oral cancer. [2] This narrative review is primarily focused on the duration and number of lesions in order to reach the specific diagnosis, if an ulcerative lesion that lasts for 2 weeks or more s considered as chronic ulcers and which last for less than 2 weeks is considered as Acute.

Recurrent ulcers are those which presents with the history of repeated occurrence with intermittent

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*Correspondence Dr. Lalbahadur L Sadhu.
Private Practitioner, Patan, Gujarat, India.
Email: Not Disclosed

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healing. Ulcers are also classified based on the numbers, Solitary defined to the single ulcerative lesion whereas the term multiple applies to several number of lesions. Thus, to establish a viable diagnosis with correct interpretation it is necessary to carry out series of steps to establish a confirmed diagnosis. In order to confirm a diagnosis, it is imperative to consider differential diagnosis as well which involves series of integrating knowledge and clinical expertise followed by additional investigations (medical, biopsy etc.) and narrowing down to single established diagnosis. It is also essential to reach to diagnosis in appropriate time as time lapse can jeopardize patient's prognosis. This review, is aimed to introduce an updated decision making stepwise approach for diagnosis of acute oral ulcerative lesions. [3]

SEARCH STRATEGY

Extensive literature search was done using available search engines and websites for the identification of relevant papers. Literature review was carried out for each specific objective on electronic databases such as PubMed, EMBASE, Medline, Scopus, Web of Science, Original papers, Case reports and Google Scholar with use of specific keywords, Booleans. apparatus, advanced filters and published articles using PRISMA guidelines for drawing up a conclusive framework of our research. Thus, research paper who qualified after the extensive review were selected for our research framework and analyzed for interpreting and concluding evidence on Oral Ulcerative lesions. Selection as well as the choice of appropriate keywords are essential to yield the database that is relevant to the research question. The main concepts of the research questions are described simply by a real word which are commonly known as keywords. The current paper utilized the keywords like "Oral lesions" "ulcerative" "Diagnosis" and online databases given for isolating and identifying the relevant database for the themes. [4]

RESULTS

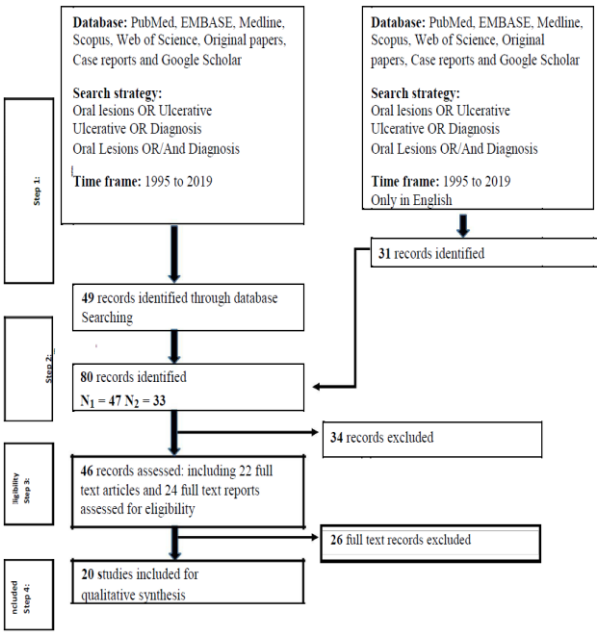
Out of total 80 articles, 34 records were excluded due to lack of full texts or being written in other languages other than English. Further 26 full text records were also excluded due to lack of evidences, methodology and internal validity of the research paper and case report. Finally, 20 full text articles were included in the review on the basis of inclusion and exclusion criteria. The flowchart (Fig. 1) represents how the articles were selected for the review and what was the combination used for their retrieval, acceptance, rejection and inclusion in this reported review. Further oral mucosal lesions were classified on the basis of their clinical characteristics which comprised of gender, age, location, number and distinguishing features. Thus the clinician can refer to this diagram and can give their diagnosis for the particular lesion.

Clinical Features of Acute Oral Ulcerative Lesions

Acute Solitary Ulcers

Traumatic injuries of the oral mucosa are quite common and are mostly caused by the mechanical damage (contact with sharp foodstuff; accidental biting during mastication, talking, or even sleeping) and thermal, electrical, or chemical burns. They are more likely to occur on the tongue, lips, and buccal mucosa [5]. According to Chen et al., traumatic lesions of the oral cavity were mostly seen on the buccal mucosa (42%), followed by the tongue (25%) and the lower lip (9%) [6]. Noteworthy, traumatic ulcers are more common in men than women (male: female ratio of 2.7:1) [6]. Many of these lesions may last for some days, seven days, several weeks, especially in the case of tongue ulcers due to repeated insults to the tissues.

Fig 1: Necrotizing sialometaplasia (NS)



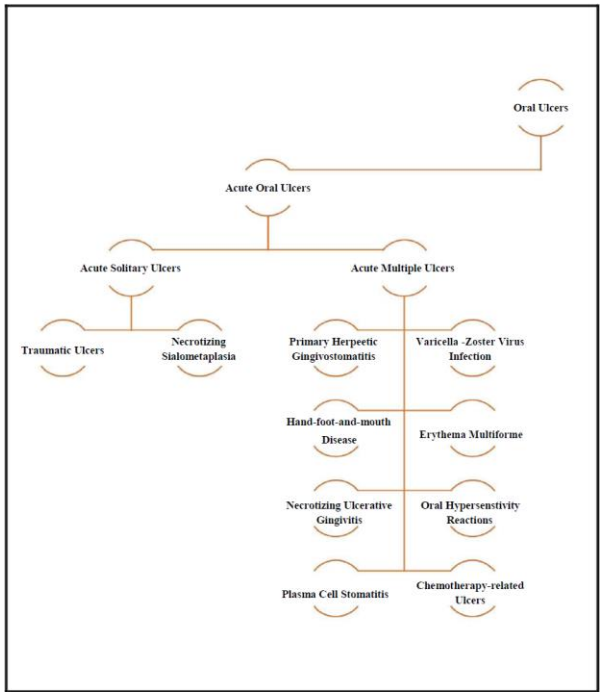


Fig 2: Decision Tree for Acute Oral Ulcers.

NS is a self-limiting, benign, inflammatory disease of the salivary glands more frequently seen in middle-aged men, it mainly occurs due to ischemia of the salivary tissue is the causative factor. There are number of risk factors that have been suggested such as sharp direct local trauma (local anesthesia, intubation, and surgical procedures), use of poorly fitted dentures, violent or provoked vomiting (in patients with bulimia), upper respiratory infection, and radiotherapy [6]. NS appears as a crater-like ulcer with indurated and well-delineated borders. More than 75% of all cases occur on the posterior part of the palate, followed by the lower lip, retromolar pad, sublingual region, tongue, and larynx . They are most likely to be healed within 10 days of time.

ACUTE MULTIPLE ULCERS

Primary Herpetic Gingivostomatitis - Primary herpetic Gingivostomatitis is the most common pattern of symptomatic herpes simplex virus (HSV) infection. More than 90 percent of the cases are caused by HSV type 1, and the remainder are caused by HSV2 [8,9]. It can present with no symptoms in the case of young adults and vice-versa with old age people [9]. Most cases occur between the ages of six months and 5 years, with peak prevalence between 2 and 3 years [11]. Fever, nausea, anorexia, and irritability are initial symptoms and the clinical features in the oral cavity consist of a generalized gingivitis followed by 2-3 days, by pin-headed vesicles that readily rupture and give rise to painful ulcers covered by a yellowish pseudomembrane and they mostly combined together to form Keratinized and non-keratinized mucosa can be affected, and the number of the lesions is quite variable [8,9]. In many cases, punched-out erosions along the free gingival margin have been reported. Submandibular lymphadenitis, halitosis, and difficulty in swallowing are noted in most cases [8,9]. Noteworthy, some adult patients may present with pharyngotonsillitis. Most of these ulcers heals in the period of five to seven days, but some persist for longer time and healed in 14 days.

Herpes Zoster Infection (Shingles) - Herpes zoster infection (HZI) is a less common viral infection brought about by the reactivation of Varicella Zoster Virus (VZV) and most of the time occurred due to the deficiency in the immune system, old age, trauma resulted from dental treatment, stress, radiation therapy, malignancy and individuals on immunosuppressant's. the incidence of diseases is 1.5-3/1000 which jumps to 10/1000 in people aged over 75 years. Majority of HZI involve the thoracic and lumbar dermatomes, but nearly 13% of patients present with involvement of the trigeminal nerve branch, most commonly the ophthalmic branch. The e condition is acutely painful and patients with involvement of the maxillary branch experience a prodromal phase of unilateral pain, burning, and tenderness, usually on the palate. The ulcers can be very painful and can believed to heal in 10-14 days, most of the clinicians says it's a self-limiting condition and anti-retroviral therapy is recommended. [10]

Herpangina - Herpangina presents as multiple vesicular exanthema and ulcers of the oropharynx, soft palate, and tonsillar pillars, these conditions are mostly prevalent during the summer among the children of age group 10 years. Coxsackie virus A genotypes 1–10 (CAV1– 10), A12, A16, and A22 and Coxsackie virus B genotypes (CBV2–5) and Echo virus 18 and Enterovirus 71 is considered as etiologic factors for causation of this disease, this is a self-limiting disease and specific antiviral therapy targeted to enterovirus is not available. [11] Hand-Foot-and-Mouth Disease - this is one of the common

causes of morbidity among children below 10 years of age. All of the patients have skin rash, especially on the hands and feet and on the buttocks. Oral ulcers are usually located on the tongue, hard and soft palate, and buccal mucosa. Treatment is similar to the management of Herpangina. [12]

Erythema Multiforme - Erythema Multiforme (EM) is a mucocutaneous hypersensitivity reaction with different etiologies. The condition is characterized by irregular red macules, papules, and vesicles that coalesce with each other to grow larger and make plaques on the skin called target lesions [13]. Oral lesions usually appear as erythematous macules on the lips and buccal mucosa, followed by bullae and ulcerations with irregular borders and inflammatory halo. Bloody encrustations can be observed on the lips, which is a diagnostic feature. EM can be triggered by medications such as sulfonamide, penicillin, cephalosporin's, quinolones, analgesics, and nonsteroidal anti-inflammatory drugs (NSAIDs) or several infections (herpes simplex virus, Epstein-barr Virus, Cytomegalovirus, Varicella Zoster Virus, fungal agents, and parasites). This mostly affects the younger adults of age group between 20 to 40 years, but it can occur as late as in the age group of 50 years as well. Most common clinical feature are pyrexia, lymphadenopathy, malaise, cough, sore throat may be noted prior to the occurrence of mucocutaneous blisters. Management mainly depends upon the extent of the condition and the recovery takes probably 10-20 days and patient is required to have wound care, soft diet, and analgesics for pain control. [13] Necrotizing Ulcerative Gingivitis - Necrotizing ulcerative gingivitis (NUG) is an acute infectious disease of the gingivae. It is characterized by "punched-out" ulcerations, and necrosis on the papillary and marginal gingivae as well as severe gingival pain and bleeding[14]. There are some predisposing factors such as smoking, poor oral hygiene, preexisting gingivitis, malnutrition, psychological stress, and HIV infection. The above-mentioned factors usually lead to immunodysregulation including depressed polymorphonuclear leukocytes, antibody response, and lymphocyte mitogenesis. NUG usually affects young adults (18–20 years of age), and it is estimated to be seen in 0.5% to 11% of the population. The diagnosis of NUG is based on three essential symptoms: sore gums, bleeding gums, and, the most diagnostic criterion, ulceration and necrosis of the interdental papillae [15]. Treatment is prescribed use of Chlorohexidine mouthwash, maintenance of oral hygiene, amoxicillin and metronidazole for a week. Inadequate treatment can lead to Necrotizing Ulcerative Periodontitis. [16,17]

Oral Hypersensitivity Reactions - Oral hypersensitivity reactions (OHRs) have a variety of manifestations: acute onset of EM ulcers, red and white reticular lesions such as lichenoid reactions, swelling of the lips, and oral allergy syndrome (itching with or without swelling of oral structures and oropharynx) [17]. Plasma Cell Stomatitis. - Plasma cell stomatitis (PCS) was first detailed in the late 1960s and early 1970s as a hypersensitivity reaction and likely a contact stomatitis to a component of chewing gum, this entity usually occurs few days after exposure and presents as erythematous macular areas of oral cavity. Ulceration, epithelial sloughing, and desquamation may also be seen. Gingivae is the mostly affected site. Anti-inflammatory drugs can be prescribed for management of the pain. [18].

Chemotherapy-Related Ulcers - Chemotherapeutic agents may cause ulcers through direct or indirect mechanisms. Bone marrow suppression and immune response of oral mucosa, which leads to bacterial, fungal, or viral infections, happen during indirect effect of chemotherapeutic agents. Other medications cause oral ulcerative lesions via direct impact on replication and growth of the oral epithelial cells. Kolbinson et al. demonstrated that early changes in the oral mucosa such as erythema and ulceration appear between 5 and 7 days after onset of chemotherapy [19]. It is also noted that these lesions are considered as risk factors for systemic infections [19]. Moreover, Dreizen et al. pointed out that 30% to 50% of patients undergoing chemotherapy develop oral lesions [20]. Anti-inflammatory drugs can be prescribed for management of the pain before the commencement of the therapy.

DISCUSSION

Acute oral ulcerations result from traumatic injury, viral or bacterial infections, allergy, or cancer chemotherapy. Acute traumatic ulcers usually present as solitary lesions of nonspecific clinical

shapes , whereas viral stomatitis appear as multiple small symmetrical ulcers, which sometimes coalesce to form larger lesions with scalloped borders. Allergic stomatitis tends to involve any site intraorally with various clinical features usually with a history of synchronous exposure to systemic allergens. Although chemotherapy induced stomatitis can be quite diffuse, its commencement is chronologically related to therapeutic agents, which differentiate it from other acute oral ulcerations. Some bacterial stomatitis presents as either acute multiple punched- out necrotic ulcerations (e.g., NUG and NUP) in patients with malnutrition or immunocompromised state. literature shows that it is a practical, rapid, inexpensive, and effective adjunct diagnostic tool in mucosal disease clinics and cancer centers with experienced providers in high-risk patients. This literature review may assist in detection of oral mucosa with molecular changes with or without phenotypic changes on biopsy that are associated with causation of cancerous lesions.

CONCLUSION

Many patients in our daily practice present to us with a chief complaint of oral ulcers which may or may not be associated with pain. Sometimes, it could be an incidental finding and even life threatening. It is mandatory for dentists to have a thorough scientific knowledge so as to identify and differentiate ulcers affecting the oral and perioral structures. Prompt diagnosis, necessary treatment and appropriate referrals are crucial in the handling of any patient presenting with oral ulcers.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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