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A Systematic Review of Cold Sores and Canker Sores

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Abstract

***Aim**: Cold sores, also known as herpes simplex, are common viral infections characterized by the formation of small fluid-filled blisters on or around the lips. These lesions may cluster and generate spots around the mouth, and once the blisters rupture, a crust forms that may last for several days. **Material and method:** Transmission occurs through close contact, such as kissing or rubbing the blisters, even when they are not visible. Although there is no definitive cure, there are antiviral treatments, such as pills or creams, that can speed healing and reduce the frequency, duration and severity of outbreaks. **Statistics and Result:** This article will detail the triggers, symptoms, diagnosis, prevention and treatment options, in the context of dentistry, for a comprehensive understanding of these viral infections and thus improve dental care for affected patients.*

Keywords: *Herpes Simplex, Viral Infections, Outbreaks, Lesions*

1. Introduction

"Every tooth on a man's head is more valuable than a diamond." Miguel de Cervantes The prevalence of labial herpetic lesions was 38.7 %, with no differences between sexes. 57.9% of the subjects who answered affirmatively were between 18 and 23 years old (Barrientos et al., 2015). The herpes simplex virus type 1 (HSV-1) is transmitted mainly by mouth-to-mouth contact thus causing oral herpes, which sometimes occurs with painful sores in the oral or perioral region (known as "hot flashes" or "cold sores"). It is estimated that, in 2016, approximately 67% of the world's population under the age of 50 or 3700 million people were infected with HSV-1. Most cases were oral infections (Translated et al., 2016).

The World Health Organization today announced the first values on the prevalence of HSV-1 in the world. The data support that more than 3,700 million people under 50 years of age are affected by this microorganism that, in most cases, causes cold sores (Translated et al., 2016). Cold sores, commonly referred to as cold sores or fever blisters, represent painful, fluid-filled lesions that emerge in the perioral area, particularly around the lips. These lesions are highly contagious and generate considerable concern among both health professionals and the general population. Cold sores, as it is known in medical terms, is mainly caused by herpes simplex virus type 1 (HSV-1). This viral infection is extremely common and affects a large percentage of the world's population.

Cold sores are characterized by the formation of vesicles filled with clear fluid, which often clump together and can become painful and uncomfortable for sufferers. Transmission of cold sores occurs primarily by direct contact with active lesions, although it can also occur during the asymptomatic

phase of infection, making it even more challenging to control its spread. Contact with febrile blisters can occur through everyday activities such as kissing, sharing eating or drinking utensils, and even through indirect contact with contaminated objects (Translated et al., 2016). This virus is usually contracted in childhood, and does not develop until a trigger appears. One way of appearance of this virus are colds, sun exposure, weariness, stress, normal changes, weather, or menstruation (Armour et al., 2020). This virus is an important human pathogen since it can cause from mild to severe infections throughout life, in the same way this virus has been pointed out as responsible for the increase and progression of the disease of the human immunodeficiency virus (HIV) (Armour, et al., 2020; Armas et al., 2020; Maldonado et al., 2020).

To avoid the virus, it is essential to take measures such as: avoid any type of direct or indirect contact, since this hot spot can be contracted if the wound is contagious Is open. The incidence of canker sores according to studies, has been seen to be in the range of 5% and 60% of the population, being that they occur in greater quantity in women under 40 years, in white individuals, non-smokers and people with a high socioeconomic level (Lindenmüller & Fistarol, 2012).Cold sores are one of the most prevalent lesions on the lips and mucous membranes of the mouth. These wounds, which are commonly referred to as lip fever, are due to activation of the herpes simplex virus. Therefore, it is a highly contagious injury that we must control.

Importantly, cold sores are highly contagious during the active phases of infection. Visible lesions on the lips and mucous membranes can release viral particles, and direct contact with these lesions or infected saliva can transmit the virus to others. Therefore, it is essential to take precautions to prevent the spread of the virus, such as avoiding close contact with infected individuals during active outbreaks and refraining from sharing utensils or oral hygiene products.Controlling lip warmth involves a combination of preventive and therapeutic measures. Preventive measures include maintaining good oral hygiene, avoiding excessive sun exposure, managing stress, and strengthening the immune system through healthy eating and regular exercise. In addition, it is important to be aware of individual triggers that may contribute to the reactivation of the virus, such as emotional stress, sun exposure, illness, or weakening of the immune system.

The most important thing is to be clear that the warmth on the lips is a very contagious wound, whose contagious origin is due to an infectious pathology and before this type of injuries, you must take all precautions, emphasizing your oral hygiene. The herpes simplex virus hides behind fever on the lips. The reality is that this virus, once it has been suffered, remains latent in the body of the affected person, and can be reactivated frequently. As a general rule, constant stress is an important factor that allows the reactivation of the pathology, generating lip warmth (Polansky et al., 2018; Matos et al., 2020; Altamirano et al., 2020).

2. Materials And Methods

Protocol

The present study followed the protocol based on Cochrane standards for systematic reviews. The Cochrane Standards are widely recognised as a reliable guide to conducting systematic reviews, ensuring a rigorous and transparent approach to the collection, evaluation and synthesis of scientific evidence. In addition, the search criteria used in this study adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols (PRISMA) guidelines. These guidelines are a set of recommendations designed to improve transparency and quality in the presentation of protocols for systematic reviews and meta-analyses.

Compliance with Cochrane standards and the use of PRISMA guidelines in research planning and execution are important aspects that ensure the rigor and quality of the study. These guidelines provide a solid structure and methodology for conducting systematic reviews, allowing for a thorough identification of the relevant literature, a critical appraisal of the included studies, and an objective synthesis of the findings.

The use of these standards and guidelines contributes to the transparency and reproducibility of the study, allowing other researchers to evaluate and verify the results and conclusions obtained. It also facilitates the comparison and integration of findings with other existing studies and reviews in the field of research.

The present study was conducted following Cochrane standards for systematic reviews and the search criteria adhered to the PRISMA guidelines. These methodologies establish a solid and reliable framework for conducting systematic reviews, ensuring the quality, transparency and reproducibility of the study.

Inclusion and exclusion criteria

The inclusion criteria used scientific articles published in the last 10 years, studies conducted on adults or children with discomfort in the oral and labial mucosa, studies conducted in Latin America, studies conducted in Spanish, English or Portuguese, studies addressing risk factors for cold sores and canker sores, studies that reported on oral hygiene factors or indicators.

The exclusion criteria used scientific articles older than 10 years, conducted on oral cancer, studies without statistical analysis, studies in a language other than Spanish, English or Portuguese, analytical studies that did not associate the indices of cold sores, canker sores and studies carried out in geographical regions other than Latin America.

Search strategy

We searched the following databases from 2012 to 12 August 2022: 1) MEDLINE via PubMed, 2) LILACS and 3) Elsevier via ScienceDirect. The search strategy used was: (cold sores and canker sores) AND (Latin America or South America).

Study Eligibility and Data Extraction:

Full texts of potentially relevant studies were screened to answer the research question. A matrix was generated for data extraction from selected studies.

The matrix had the following fields: authors, year of publication, country, mean age, prevalence of cold sores, canker sores and type of prevalence in people.

3. Results and Discussion

Lip warmth

Treatment of cold sores involves the use of antiviral medications, which require a prescription and can be administered as topical creams or orally. In case cold sores persist for an extended period, it is recommended to seek medical attention. It is also important to consult a healthcare professional if you experience a high fever or detect eye irritation. These symptoms may indicate the need for further medical evaluation (Polansky et al., 2018).

Main factors of infectious reactivation

- Sunbathing excessively and without lip protection.
- Hormonal changes in women.
- Presence of infections of various types.
- Flu and colds.
- Exacerbated tiredness.
- Anxiety or stress.
- Weakening of the immune system.
- Exposure to extreme weather changes.
- Very cold climates.

Some antibiotic treatments (Armour et al., 2020).

Symptoms of cold sores:

fluid-filled blisters that form outside the mouth, around the lips;

Burning or tingling sensation in the place where the blisters will appear;

And sometimes fever, tiredness, or swollen lymph nodes, similar to other viral infections (Armour et al., 2020; Levya et al., 2021; Ricardo et al., 2018).

Diagnosis

A fundamental distinction between cold sores and canker sores lies in their characteristic location. Cold sores manifest in the outer area of the mouth, usually around the edge of the lips, while canker sores arise inside the oral cavity.

This anatomical distinction is essential to correctly identify and differentiate both conditions. Cold sores, also known as cold sores, present as fluid-filled lesions that usually form in the perioral region.

These lesions can be painful and are mainly associated with herpes simplex virus type 1 (HSV-1). On the other hand, canker sores, also called aphthous ulcers, are small ulcers or sores that develop on the mucous membranes inside the mouth, such as the gums, soft palate or tongue, these ulcers can be painful and, in some cases, may be associated with factors such as stress, nutrient deficiency or compromised immune system (Armour et al., 2020).

It's important to note that while location is a key distinction, there are other signs and symptoms that can help differentiate between cold sores and canker sores. For example, cold sores usually present as fluid-filled blisters before crusting over, while canker sores usually appear as round or oval ulcers with no fluid content. On the other hand, canker sores can be caused by different factors, such as oral lesions, nutritional deficiencies, hormonal changes, emotional stress or systemic diseases. Canker sores can also vary in size and number, and it is possible for several ulcers to appear at the same time.

Understanding these anatomical and clinical differences is essential for an accurate diagnosis and proper therapeutic approach. If any injury to the mouth occurs, it is recommended to consult a healthcare professional, such as a dentist or doctor, for proper evaluation and appropriate treatment based on the nature of the injury and associated symptoms (Gómez, et al., 2022; Rosales et al., 2020; Noroña et al., 2020).

Also, their appearance is different. Cold sores are patches made up of several small, fluid-filled blisters, while canker sores are usually single, round white or yellow sores with a red border.

Lip warmth	
Localization	on the outside of the mouth around the lips
Appearance	group of small fluid-filled blisters 
Cause	infection with herpes simplex virus type 1 or HSV-1
Are they contagious?	Yes

Prevention of the spread of cold sores

Warmth on the lips is a very contagious lesion, which must be cared for and treated diligently, in order to prevent it from spreading easily, this virus is acquired by direct and indirect contact (Giannetti et al., 2018).

In the event that your young children have a fever on their lips, optimize the hygiene and cleanliness of their toys and clothes. Children are more likely to suffer from the pathology, because they usually share objects while playing (Translated et al., 2016). It is essential to understand the importance of maintaining proper oral hygiene both in the case of suffering from cold sores and in situations free of this condition. A key preventive measure to preserve oral health is to avoid sharing your toothbrush with others. This is especially relevant in the context of cold sores, as herpes simplex virus type 1 can be transmitted through saliva and come into direct contact with toothbrush bristles.

In addition, it is essential to maintain a rigorous oral hygiene routine, including proper brushing of teeth at least twice a day, flossing, and mouth washing. These practices help eliminate bacterial plaque and food debris that can Favor the development of oral diseases.

In the specific case of cold sores, it is essential to avoid touching or scratching active lesions to prevent the spread of the virus and worsening of symptoms. In addition, it is recommended to avoid direct contact with the lesions, especially if there is any open wound in the mouth or on the lips.

Preventing oral diseases not only contributes to maintaining a healthy smile, but can also prevent more serious complications, such as secondary infections or periodontal problems. Therefore, it is important to maintain good oral hygiene, go regularly to dental check-ups and follow the recommendations of health professionals to ensure optimal oral health in all circumstances. The spread of cold sores can occur at any stage of the pathology; However, when the blisters are visible is when there is a greater chance of contracting the infection (Sancehez et al., 2020).

Both cold sores and canker sores can present triggers that contribute to the occurrence of recurrent outbreaks Identifying and avoiding these triggers can play a crucial role in reducing the frequency and severity of outbreaks in the future.In the case of cold sores, common triggers include emotional stress, excessive exposure to sunlight, fatigue, hormonal changes, concomitant viral infections, and weak immune system. Recognizing these individual factors can help prevent outbreak recurrence.

For example, adopting stress management techniques, protecting lips from excessive sun exposure by using sunscreen lip balms, and maintaining a healthy lifestyle that promotes a strong immune system may prove beneficial in preventing future flare-ups of cold sores (Giannetti et al., 2018).

Tips for cold warmth

Sometimes, sun exposure can cause flare-ups of cold sores. If you have recurring hot flashes, using sunscreen can help decrease how often they appear (Giannetti et al., 2018). Cold sores are contagious. Avoid kissing someone, sharing kitchen utensils, cups, water bottles, and other items if you have symptoms. Keep in mind that in young children, cold sores can cause loss of appetite, drooling, and fever that can last for several days. Talk to your doctor or your child's pediatrician if symptoms are severe or recur often (Negreiros et al., 2020).

Canker sores

Canker sores is an elementary lesion with liquid content and round or oval mucous defects, painful, small in size covered with a yellowish-white fibrin layer and surrounded by an erythematous margin, is located in the mucous epithelium, may appear in one or more areas and generally leaves no scar except Sutton's canker sore (Lindenmüller & Fistarol, 2012).

Canker sores can appear in one or more areas of the oral cavity. The simultaneous appearance of several canker sores in different areas of the oral mucosa gives rise to a picture called aphthous stomatitis.

The etiology still remains unknown is attributed a multifactorial cause may be related to the following:

Inheritance
Immunological Factors
Psychological Factors
Trauma
Dietary factors and vitamin deficiencies
Smoking
Endocrine Factors
Viral and bacterial factors (Fitzpatrick et al., 2019)
Canker sores go through a series of periods:
Vesiculous period

It is a difficult period to visualize during which, the canker sore has a diameter of 2 to 5 mm and elevation of the epithelium that covers a yellowish spot surrounded by an erythematous halo (Fitzpatrick et al., 2019).

ulcerative period

It occurs after the tearing of the epithelial roof. The background presents cellular detritus and fibrin and neutrophil infiltrate at the margins and in depth. It is a very painful period, during which patients report burning sensation, difficulty in chewing, swallowing and even phonation.

Healing Period

The ulcer is cleaned and reepithelialized without leaving a scar.

Classification

Minor Canker Sores

They are small mouth ulcers of 5 to 10 mm round or oval delimited and not painful surrounded by an erythematous halo and shallow. It can be located in all non-keratinized areas of the oral cavity including the labial mucosa, vestibular, floor of the mouth and the ventral or lateral area.

Canker sores

Inflammatory infiltrate around the accessory glands of the oral mucosa with the basal lamina preserved. The ulceration is deeper, the pain very intense and usually appears 1 or 2 at the same time. They appear in the labial mucosa, soft palate and isthmus of the jaws (Fitzpatrick et al., 2019).

Topical treatment

In the treatment of canker sores, different therapeutic approaches are used to relieve symptoms and speed healing. One of the most common topical treatments involves the use of topical corticosteroids, which are administered in the form of adhesive gels, mouthwashes or by intralesional injections.Topical corticosteroids are effective in reducing the discomfort associated with canker sores, such as pain and inflammation. These medications work by decreasing the inflammatory response in the affected area, which contributes to better healing and symptom relief. However, it is important to note that prolonged use of topical corticosteroids may increase the risk of developing thrush infections.

Oral candidiasis, also known as thrush, is a fungal infection caused by the overgrowth of the Candida fungus in the mouth prolonged use of topical corticosteroids can alter the balance of microorganisms in the oral cavity and Favor the proliferation of Candida, leading to the appearance of candidiasis. Therefore, it is important to use topical corticosteroids as directed and under the supervision of a healthcare professional, to minimize the risk of complications (Armour et al., 2020). Benzydamine is eminently analgesic and also has a certain anti-inflammatory, bactericidal and fungicidal effect. Tetracyclines also have an anti-inflammatory effect and can speed up the healing phase if administered in the form of mouthwash. Its use is contraindicated in children, during pregnancy and lactation (Lindenmüller & Fistarol, 2012).

A transient improvement of pain is achieved by the administration of local anesthetics in the form of sucking tablets, sprays, gels and mouthwashes. In prolonged treatments, products that do not stain the dental substance should be used. Over time, a number of physical procedures such as surgery, electro-ablation, CO2 laser ablation and the application of silver nitrates have been used to treat canker sores.

Tips for canker sores:

Avoid harsh, acidic, or spicy foods that may cause further irritation and pain. Brush your teeth carefully, with a soft brush and toothpaste without foaming agent (Negreiros et al., 2020).

In the field of dentistry, it can be seen that in the environment there is a number of viral agents that for different circumstances are activated in the human body, reacting in different ways or ways, in the case proposed in ulcerations both in the labial warmth (external) and in the canker sores (internal).

In this regard, the field of dentistry plays a crucial role in the diagnosis, treatment and management of oral ulcerations caused by viral agents. Dental professionals are trained to identify the clinical features of lesions, make an accurate diagnosis, and provide appropriate treatment options.

In addition, patient education on the prevention and control of viral outbreaks is essential to minimize the frequency and severity of ulcerations. The appearance of these viruses is not recent, older than the elderly, report having had this pathology in their childhood and adolescence (Manfredini et al., 2021).

The pathogenic viruses referred to although they cause discomfort, especially in the area of the face and mouth, are not classified as serious pathogens, since it is not known as a mortality rate and rather pharmacological medicine has helped enormously to alleviate this type of discomfort. Now, the way in which this type of virus is acquired deserves special attention because we talk about stress, exposure to sunlight, food, among others.

In the current moments in which the country and the world live, it is impossible not to worry about the growing hole in the atmospheric ozone layer since there is an increasing amount of solar radiation that affects the skin, and about the food poverty to which a large percentage of the Ecuadorian population is subjected (Crimi et al., 2019).

Therefore, it is important to carry out educational prevention campaigns that reduce and avoid contagion as much as possible. The population should know that its transmission like other viruses is through close contact and infected must be otherwise honest and indicate that they have the virus in Yes to the people who live in their environment.

4. Conclusion

The present research has led to the conclusion that various factors, such as viruses, bacteria and vitamin deficiency, can trigger the appearance of oral problems, such as cold sores and canker sores. These pathologies, which are common in the oral mucosa, negatively affect the quality of life of the patient due to the discomfort they generate in daily activities such as talking, eating or drinking. It is essential to make a correct diagnosis of these lesions through a visual examination performed by a trained dentist, this accurate diagnosis will allow to apply an effective and adequate treatment, adapted to the specific characteristics of each patient and the lesions present. Through the bibliographic review carried out within the framework of this research, it has been possible to identify the predisposing causes for the development of cold sores and canker sores. This provides an opportunity to take preventive measures to minimize the occurrence of these injuries in the future. In addition, the importance of taking into account certain factors that can influence the manifestation and management of these conditions has been highlighted, thus allowing them to cope in the best possible way.

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