Canker Sores

Aphthous ulcer

Aphthous ulcer

Classification & external resources

Mouth ulcer on the lower lip

ICD-10
K12.0

ICD-9
528.2

MedlinePlus
000998

eMedicine
ent/700 derm/486 ped/2672

An aphthous ulcer or canker sore is a type of mouth ulcer which presents as a painful open sore inside the mouth caused by a break in the mucous membrane. The condition is also called aphthous stomatitis, also known as "Sutton's Disease", especially if there are multiple or recurring mouth ulcers.

The term aphtha means ulcer;
it has been used for many years to describe areas of ulceration on mucous membranes. Aphthous stomatitis is a condition which is characterized by recurrent discrete areas of ulceration which are almost always painful. Recurrent aphthous stomatitis (RAS) can be distinguished from other diseases with similar appearing oral lesions, such as certain viral exanthems, by their tendency to recur, their multiplicity, and chronicity.
Recurrent aphthous stomatitis is one of the most common oral conditions. At least 10% of the population suffers from it. Women are more often affected than men. About 30–40% of patients with recurrent aphthae report a family history.[1]

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Presentations of aphthous stomatitis

Aphthous ulcers are classified according to the diameter of the lesion.

Recurrent Aphthous Stomatitis

Recurrent Aphthous Stomatitis, often referred to as canker sores, is a T-cell mediated localized destruction of oral mucosa associated with an increased relative ratio of CD8+ T-cells to CD4+ T-cells.

Large aphthous ulcer on the inner side of the lower lip: 10 mm (1 cm) length and 5 mm width.

Minor aphthous ulcerations

This is the most common and least severe form of the disease. Aphthous ulcers develop in childhood and adolescence, and continue sporadically throughout life. Aphthous ulcers occur exclusively on non-keratinized, moveable mucosa, such as buccal (cheeks) and lingual mucosa, the floor of the mouth, and the soft palate. It is characterized as a yellow-gray ulcer surrounded by an erythematous halo less than 10 mm in diameter. They tend to heal without scarring in 7–10 days. Typical treatment is with topical steroids, although treatment is not necessary for healing to occur.

Major aphthous ulcerations

Major aphthous ulcers have the same appearance as minor ulcerations, but are greater than 10 mm in diameter and are extremely painful. They usually take more than a month to heal, and frequently leave a scar. These typically develop after puberty with frequent recurrences. They occur on moveable non-keratinizing oral surfaces, but the ulcer borders may extend onto keratinized surfaces. The lesions heal with scarring and cause severe pain and discomfort.

Major aphthous ulcer in the back of the mouth

Herpetiform aphthous ulcerations

This is the most severe form. It occurs more frequently in females, and onset is often in adulthood. It is characterized by small, numerous, 1–3 mm lesions that form clusters. They typically heal in less than a month without scarring. Palliative treatment is almost always necessary.[2]

Symptoms

Aphthous ulcers often begin with a tingling or burning sensation at the site of the future mouth ulcer. In a few days, they often progress to form a red spot or bump, followed by an open ulcer.

The aphthous ulcer appears as a white or yellow oval with an inflamed red border. Sometimes a white circle or halo around the lesion can be observed. The grey-, white-, or yellow-colored area within the red boundary is due to the formation of layers of fibrin, a protein involved in the clotting of blood. The ulcer, which itself is often extremely painful, especially when agitated, may be accompanied by a painful swelling of the lymph nodes below the jaw, which can be mistaken for toothache.

Causes

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The exact cause of aphthous ulcers is unknown. In some cases they are thought to be caused by an overreaction by the body's own immune system. Factors that appear to provoke them include stress, fatigue, illness, injury from accidental biting, hormonal changes, menstruation, sudden weight loss, food allergies, the foaming agent in toothpaste: SLS, and deficiencies in vitamin B12, iron, and folic acid.[3] Some drugs, such as nicorandil, have been linked with mouth ulcers. A well-known cause for ulcers in the mouth is when the skin inside the mouth is opened up, a common cause of this is biting one's lip or any tissue within the mouth.

Aphthous ulcers are thought to form when the body becomes aware of and attacks chemicals which it does not recognize.[citation needed] The presence of the unrecognized molecules garners a reaction by the lymphocytes, which trigger a reaction that causes the damage of a mouth ulcer.

Trauma to the mouth is a common cause of aphthous ulcers.[citation needed] Physical trauma, such as toothbrush abrasion, poking with sharp food, accidental biting (this can be particularly common with sharp canine teeth), or dental braces can cause mouth ulcers by breaking the mucous membrane. Other factors, such as chemical irritants or thermal injury, may also lead to the development of ulcers. However, in many cases the cause is unknown.

There appears to be a commonly held belief that another cause of aphthous ulcers is gluten intolerance (Coeliac disease), whereby consumption of wheat, rye, barley and sometimes oats
can result in chronic mouth ulcers. However, two small studies of
patients with Coeliac disease have demonstrated no link between the
disease and aphthous ulcers.[4][5] If patients with aphthous ulcers do happen to have gluten intolerance, they may experience benefit in eliminating breads, pastas, cakes, pies, cookies, scones, biscuits, beers and so on from their diet and substituting gluten-free varieties where available.[4]

Artificial sugars, such as those found in diet cola and sugarless gum, have been reported as causes of aphthous ulcers as well. They can also be linked to an increased intake of acids such as ascorbic acid (one form of Vitamin C) or citric acid. In this case the sores disappear after intake decreases (for example, by substituting ascorbate salts for ascorbic acid).

Another possible cause of aphthous ulcers may be opportunistic activity by combinations of otherwise normal bacterial flora, such as aerobic streptococci, Neisseria, Actinomyces, spirochetes, and bacteroides.[citation needed] According to small-scale experiments by one patent applicant Hau, (6,248,718), topical preparations of high doses of penicillin resulted in accelerated healing of mouth ulcers.

Repeat episodes of aphthous ulcers can be indicative of an immunodeficiency, signalling low levels of immunoglobulin in the mucous membrane of the mouth.[citation needed] Certain types of chemotherapy cause mouth ulcers as a side effect.[6]
Mouth ulcers may also be symptoms or complications of several diseases
listed in the following section. The treatment depends on the believed
cause.

The large majority of toothpastes sold in the U.S. contain Sodium lauryl sulfate (SLS), which is known to cause aphthous ulcers in certain individuals. Using a toothpaste without SLS will reduce the frequency of aphthous ulcers in persons who experience aphthous ulcers caused by SLS.[7][8][9] However, some studies find no connection between SLS in toothpaste and mouth ulcers.[10]

A common urban myth is that aphthous ulcers are directly connected to the onset of the herpes simplex virus. In reality, ulcers associated with herpes (or cold sores) are of an entirely different nature from mouth ulcers, which are not contagious.

Pain relief and healing

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Any mouth sore that does not heal after two weeks should be looked at by a dentist or an oral surgeon as it could be a sign of a more serious condition such as oral cancer.

Aphthous ulcers normally heal without treatment within 1 to 2 weeks. Good oral hygiene should be maintained, and spicy, acidic, and salty foods and drinks are best avoided, as they may irritate existing ulcers.

Pain can be treated with several pain-relieving gels, such as Anbesol, Bonjela, Campho-Phenique, Orabase B, Zilactin, or Kanka, available in drugstores. Some people claim that such gels also accelerate the healing of their ulcers.

A dental laser can be used to treat an aphthous ulcer. Immediate and lasting pain relief is achieved, and the ulcer will heal in a few days.[citation needed]

Use of a hydrogen peroxide antiseptic mouthwash can help to significantly reduce pain from irritation caused by debris and bacteria that accumulate in an ulcer, reducing complications associated with its presence. This treatment is widely available at pharmacies from companies such as Colgate, whose product is called Peroxyl. Diluting 3 percent food grade hydrogen peroxide (commonly available in drug stores) with equal parts water can be as effective and less expensive.

Another purported remedy is the use of the prescription steroid Dexaltin Oral Paste (Dexamethasone 1–mg/g).[citation needed]

Triamcinolone Acetonide dental paste can be very effective; the steroid reduces the immune system's response in the area of the ulcer. It is available by prescription only.

A recent study of the Oral-B product Amosan suggests that it may reduce anaerobic bacteria, such as those found in oral wounds. The study did not, however, demonstrate the efficacy of the product in treating mouth ulcers.[11]

Tincture of benzoin
can be used as a protectant for recurring aphthous ulcers, by forming a layer over the sore and protecting it from further irritation.

Early treatment

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The timing of treatment can be critical for a significant reduction of the length of time of the pain caused by the ulcer. If repeated antiseptic mouthwash treatments are applied as early as possible, preferably within 12 hours of the initial symptoms, i.e. the onset of tingling or burning sensations, then the subsequent intense pain will only last 1–2 days, instead of the usual 7 to 10 days.[citation needed] Although the ulcer will continue its normal course of healing within 7 to 10 days, an early treatment limits the pain to just the first couple of days.

Since this type of ulcer is highly recurrent, people suffering from it can usually recognize the telltale signs of another imminent onset, and therefore the chance of reducing or even eliminating the pain associated is good if treated early. Unfortunately, if treatment is delayed until 24 hours after the start of intense pain, only temporary relief of up to several hours can be achieved per treatment.

Home remedies

The most popular home remedies for canker sores include the following:

- Rinse the mouth with salt water— 1 teaspoon of salt dissolved in 1 cup (250 ml) of warm water (a.k.a. a saline solution).

- Eat 8 ounces per day of yogurt with active Lactobacillus acidophilus cultures.

- Swab mouth ulcers with sea-buckthorn fruit oil.

- Rinse regularly with ginger, lemon and honey tea. All 3 ingredients have strong anti-bacterial properties. This has been found very effective by some people, with white caps disappearing within 24 hrs.

- Rinse the mouth with an antiseptic mouthwash (e.g., Listerine), which can relieve pain for a few hours. This effect has been known to diminish over time in some individuals after prolonged usage[citation needed]

- Apply Carbamide peroxide (Gly-Oxide®) directly to the ulcers, and swish around mouth.

- Take Lysine-L supplements.[12]

- Rinse mouth and especially the affected area with sage tea 3 times a day. The improvement can be seen as early as within 24 hours.[citation needed]

- Paint half-strength gentian violet solution on the ulcer.[1]

- Gargle a mouthful of warm vinegar with a half-tablespoon of salt for about 30 seconds, 3 times per day; this may be extremely painful, immediate removal of white viscous cap on the sore, providing pain relief after rinsing quite quickly, but healing can be seen in as early as 2 days.[citation needed]

- Some have applied anise directly on the ulcer.

- Hold moderately concentrated alcohol in the mouth over the area of the ulcer, possibly because of alcohol's diuretic effect (although there is no direct evidence to support this). Alcohol may also be useful due to its antiseptic properties.

- Pour whiskey onto a Q-tip and hold directly onto canker sore until initial burning subsides. Helps with numbing the sore and its inflamed areas.

- Similarly the direct application of a small layer of salt to the canker sore, while extremely painful for the first 10 seconds or so, will numb the area for about 30 minutes to an hour.

- Bee propolis may speed healing and provide pain relief due to its anesthetic and anti-bacterial properties.

- Licorice Root (Glycyrrhiza) may help heal canker sores if the medicated disks are applied early on.[citation needed]

- The application of tea tree oil directly on the mouth sore is said by some to help speed up the healing process, although tea tree oil is used almost exclusively for external purposes.[2]

- Cut a clove of garlic in half and rub on to ulcer several times per day. This may be painful at first but does appear to aid healing.

Antacid techniques suggested include the following:

- Swab the ulcers with Milk of Magnesia.[3]

- Apply powdered alum, a spice used in canning, dry directly to the ulcers— available in the spice aisle at grocery[citation needed]stores; this can be very painful at first, and then sore will be numbed.

- Make a paste of baking soda and water; apply directly to the ulcers.[4]

- Rinse the mouth with a baking soda-water mix—1 teaspoon of baking soda dissolved in 1 cup (250 ml) of warm water.[citation needed]

- Make a paste of crushed Tums (antacid) and water—apply directly to the ulcers.[citation needed]

- Avoid acidic foods such as tomato, citrus, soft drinks, and vinaigrette salad dressings.[citation needed]

- Apply a yeast-based spread such as Vegemite, Marmite, or Cenovis directly to the ulcer. The salt helps kill any bacteria and dry out the wound, while the vitamin B facilitates healing.[citation needed]

- Make a mix of half Mylanta and half Benadryl, and hold in the mouth for up to 3 minutes.[citation needed]

- Dab the ulcer with Vanilla extract.

- Keeping the ulcer dry by exposing the ulcer to the air and keeping saliva out of the ulcer for periods up to 30 minutes once or twice a day sometimes has a dramatic effect on the ulcer in as little as 24 hours.[citation needed]

Combination therapies recommend the use of the antiseptic before the antacid; that is, swab mouth ulcers with hydrogen peroxide and then swab them with Milk of Magnesia.

A good temporary remedy for the pain of the mouth ulcer is to numb the affected area with ice. Although this may cause intense pain in the beginning, it is highly effective and lasts for about half an hour,[citation needed] depending on the number of ice cubes used and the time spent using the ice cubes.[citation needed]

Treatment for severe cases

Treatments based on antibiotics and steroids such as Dexamethasone Elixir are reserved for severe cases, and should be used only under medical supervision. Tetracycline suspension is a common antibiotic prescribed for mouth ulcers. Some doctors may also prescribe a local anesthetic, such as lidocaine, for cases of multiple or severe aphthous ulcers. If it does not heal within a week, a doctor or dentist may cauterize it using a laser to burn off the ulcer, causing it to

completely disappear within a few hours or two to three days.[citation needed]

In very severe cases, a doctor may prescribe a steroid treatment. One such steroid is methylprednisolone (usually in a dose-pack), taken orally for a period of 7 days.
Alternatively, the doctor may directly inject a steroid into the site of the ulcer (this treatment is performed with kenalog.
Between 0.2 and 0.4 ml of kenalog is injected into the site of the ulcer, which will usually be completely healed 72 to 96 hours after the injection).

Patients in whom ulcers do not respond to local treatment may benefit from a short course of pulsed prednisone.

Some dentists recommend a sulfuric acid solution for treating mouth ulcers, such as debacterol.

Thalidomide
has been effective in unresponsive aphthous stomatitis. Thalidomide has been used successfully generally to treat various inflammatory conditions characterized by tissue infiltration with polymorphonuclear leukocytes (PMNLs). Therapeutic benefit has been attributed to depression of PMNL chemotaxis and, possibly, PMNL phagocytosis. However, adverse effects can be both problematic and clinically significant.

Another chemical treatment option is the application of silver nitrate to cauterize the sore. In clinical trials it was found that this treatment reduced pain in patients by 70% with one application but had no effect on healing compared to placebo.[13]

Another choice doctors have is to prescribe Aphthasol, the only Food and Drug Administration (FDA) approved treatment specifically indicated for Aphthous ulcers.

Controversial therapies include levamisole, colchicine, gamma-globulin, dapsone, estrogen replacement, MAOIs, and tetracycline. [5]

Some evidence supports treatment with tetracycline. Tetracycline oral mouth rinse (ie, swish orally and swallow) decreases healing time and pain severity and duration. Whether this benefit is due to a direct antimicrobial effect or to an inhibitory effect on chemotaxis and chemotoxicity is not known.

The miracle cures that are advertised should be viewed with skepticism. However, aqueous sulphuric acid products as listed above can provide significant pain relief, if not treating the underlying causes.

Prevention

Oral and dental measures

- Regular use of mouthwash may help prevent or reduce the frequency of the sores.[14]

- In some cases, switching toothpastes can prevent mouth ulcers from occurring with research looking at the role of sodium dodecyl sulfate (sometimes called sodium lauryl sulfate, or simply SLS), a detergent found in most toothpastes. Using toothpaste free of this compound has been found in several studies to help reduce the amount, size and recurrence of ulcers,[15][16] but not in all studies.[17]

- A few individuals have noticed that switching to a toothpaste with baking soda prevented recurrence of mouth ulcers.[citation needed]

- Some people have reported that the frequency of mouth ulcer occurrences decreased greatly after a particularly large amalgam tooth filling was replaced by some other kind of dental restoration.[citation needed] However, the connection between amalgam fillings and mouth ulcers is not universally accepted, and such replacement can be costly.

- Dental braces are a common physical trauma that can lead to mouth ulcers and can be treated with wax to reduce abrasion of the mucosa. Avoidance of other types of physical and chemical trauma will prevent some ulcers, but since such trauma is usually accidental, this type of prevention is not usually practical.

- Take caution when brushing or flossing teeth, and be extra careful when using a toothpick.

Nutritional therapy

- Zinc deficiency has been reported in people with recurrent mouth ulcers.[18]The few small studies looking into the role of zinc supplementation have mostly reported positive results particularly for those people with deficiency,[19][20]although some research has found no therapeutic effect.[21]

- Julian Whitaker, M.D., founder and president of the Whitaker Wellness Center in Newport Beach, California, says that eating at least four tablespoons of yogurt daily can prevent outbreaks.[22] He notes that the yogurt must contain active Lactobacillus acidophilus cultures. (If the yogurt contains these cultures, it will say so on the label.)

- Many people have found that taking Lysine-L supplements can help to reduce the frequency of mouth ulcer appearances and speed the healing of those that do occur.[citation needed]

- Likewise, abstaining from arginine (lysine's counterpart), which is found in chocolate and nuts, can prevent an outbreak.[citation needed]

- The presence of bacterially infected ulcers could be a symptom of intestinal bacterial imbalance.[citation needed] Probiotic supplements or 'good bacteria' found in food like yogurt will treat this condition.[citation needed]

Alternative medicine

Chinese medicine points to one's diet or emotions as potential causes of such symptoms of 'heat in the mouth.'[citation needed]

Greasy/fried foods or 'energetically hot' food (for example: spicy food, alcohol, potato chips) may also trigger mouth ulcers. Some claim that certain emotions, such as anger, frustration, resentment, or stress, can also impede the proper flow of one's energy and create 'heat' in the body, with such manifestations as mouth ulcers, red eyes, sore throats, insomnia, or constipation. In order to neutralize this 'hot energy' certain 'energetically cool' foods such as herbal teas and certain fruits and vegetables must be consumed. Some other examples of such 'cooling' foods include coconut juice (surprisingly the kernel is opposite and is classified 'hot'), mung bean soup, and ginseng tea.[citation needed]

See also

- Mouth ulcer

- Herpes simplex (Cold Sore)

Footnotes

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