تأثير أشعة الليزر منخفض الكثافه على التئام جروح الأنسجة المبطنه للفم بتأثير الحروق و المواد الكيميائيه الملهبه للأنسجه على فئران التجارب

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في
الأشعه و التشخيص

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INTRODUCTION

The delicate mucous membrane of the oral cavity is readily and rather frequently injured by trauma arising from physical or chemical insults. Physical agents are those referable to very hot foods or drinks or to electrical reaction, while chemical agents are represented by too concentrated gargles or the swallowing of poisons, either accidentally or purposely, in the form of acids, alkalies, or any other type of caustic substance. Special attention should be called at this moment to the caustic effect of even mild gargles as, for instance, relatively weak solution of potassium permanganate and salicylic acid **(*Irwin waiter scopp et al., 1973*).**

Thermal burns are relatively uncommon, and when they occur, it is rare for superficial necrosis to develop. They may result from the accidental contact of a hot dental instrument , hot wax or hot impression materials with the oral tissue. The inhalation of hot air which is primarily observed in explosions may be responsible for any type of the three stage of burns. Inhalation of steam under pressure is especially dangerous and frequently fatal. Sever burns from a hot fluids are rarely seen, on the other hand, mild burns are very commonly observed. Lesions arising from the direct contact of sever cold in the oral cavity are rarely seen **(*Lester .w., 1970*).**

Gingival and oral mucosal lesions result frequently from chemical sources of irritation. This form of gingivitis should not be confused with stomatitis medicamentosa or stomatitis venenata which are allergic manifestations, representing an altered individual reaction to some substance. Chemical gingivostomatitis arises from the therapeutic use of irritating drugs in the office or home, various form of occupational

exposure, tobacco, snuff, alcohol and substances which may be taken accidentally or with suicidal intent ***(Lester .w., 1970*)**.

Aspirin containing compounds are a common source of burns of the oral mucosa usually occurring when an analgesic powder or tablet is placed in the mucobuccal fold for the relief of pulpitis, periostitis, or a periapical abscess. Irregularly shaped white pseudo-membranous painful lesions develop where the medicament touches the oral mucosa and the gingival tissues **(*Irwin waiter scopp et al., 1973*).**

In 1904 Buckley described the treatment of putrescent pulps using a mixture of equal parts of Tricresol and Formalin (an aqueous solution of formaldehyde gas generally found to be equivalent to 38 percent w/w formaldehyde) on a cotton wool pellet that was hermetically sealed into the pulp chamber in two consecutive visits. He attributed the success of the procedure to the conversion of chemically irritating gases and poisonous ptomaines into nonirritating and nonpoisonous liquids and solids. The aim being to completely fix the radicular pulp, which was then theoretically sterilized and devitalized using an antiseptic and germicidal chemical, thereby preventing infection and internal resorption ***(Nunn .JH et al., 1996).***

Formocresol as a pulpotomy medicament has a long successful clinical history but, unfortunately its use in dentistry has become a controversial issue when reports demonstrating its wide distribution following systemic injection and immune response to formocresol fixed autologous tissue implanted in connective tissues or injected into root canals started to appear in the literature. Its safety has been also questioned as it was known to have a toxic, mutagenic and carcinogenic

potential. and when studies demonstrated a systemic uptake of formocresol from pulpotomized teeth ***(Myers .DR et al., 1978 ; Myers .DR et al., 1981; Yamasaki .M et al., 1994*** *and* ***Lewis .B., 1998).***

Light therapy has been proven in over 40 years of independent research worldwide to deliver powerful therapeutic benefits to living tissues and organisms. Both visible red and infrared light have been shown to effect at least 24 different positive changes at a cellular level. Light therapy has also been given the name "phototherapy" ***(Jeffrey .R .Basford., 1989).***

Laser therapy is really a form of light therapy, and lasers are important in that they are convenient sources of intense light at wavelengths that stimulate specific physiological functions. All biological systems have a unique absorption spectrum which determines what wavelengths of radiation will be absorbed to produce a given therapeutic effect ***(Mayo Clinic., 1989).***

A medical laser device includes a source of electricity, mirrors to direct the beam, a crystal or gas that is stimulated to emit the light, and tubing to deliver the light energy. The nature of the material through which the light passes determines the specific properties of the laser and therefore what it can do in the human body. Instrument design is tailored to specific uses. Many dental lasers, for example, include long narrow tubing so that the dentist can use it in the mouth ***(Lynchetal ., 1994).***

Lasers are of two principal types, hard "hot" and soft "cold", and they are distinguished by the amount of peak power they deliver. "Hot" lasers deliver power up to thousands of watts. They are used in surgery because they can make an incision that is very clean with little or no bleeding and

because the laser cauterizes the incision as it cuts. They are also used in surgery that requires the removal of unhealthy tissue without damaging the healthy tissue that surrounds it. "Cold" lasers produce a lower average power of 100 milli watts or less **(*Mayo Clinic., 1989 and Luomanen et al., 1990).***

Over the last 20 year low intensity laser irradiation (LiLi) has established as a successful method of promoting tissue repair when data in vitro demonstrates that LiLi can stimulate all proliferation, collagen synthesis and the release of growth factors from cells ***(Abergel et al., 1984 ; Iam et al., 1986 and Yuw et al., 1994).***

Low intensity laser irradiation used in clinical practice as a valuable method in treating superficial lesions such as wounds, burns, granulomas. In contrast, of 5 recent studies, 2 indicated enhanced fibroblastic activity in vitro, and 2 failed to find evidence that laser power helpe wound healing in vivo. However, one of those concluded that "a combination of He-Ne laser and infrared light may promote the healing of venous leg ulcers" ***(Takac and Phil .AM .Rogers., 2004).***

REVIEW OF LITERATURE

Burns of the oral mucosa are a frequent cause of transient nonkeratotic white lesions, the white appearance of the mucosa being attributable to a superficial pseudomembrane composed of coagulated tissue with an inflammatory exudate. Except in xerostomic individuals, the normal coating of saliva protects the oral mucosa from many physical and chemical agents, and significant damage occurs only when there is prolonged contact or a severe insult. For the same reason, injuries to the oral mucosa of xerostomic individuals are likely to be more severe, even from otherwise minor burns such as those caused by hot cigarette smoke. Superficial necrosis and scarring of the oral mucosa from a burn is rare, except for those caused by a very hot object (e.g., a hot dental instrument or molten impression compound,anesthetic gas explosions, or electrical burns. Localized mucosal lesions caused by contact with alkaline ultrasonic cleaning fluid and glutaraldehyde also have been reported ***(Irwin Walter scopp.,1971).***

signs and symptoms of burns of the oral mucosa :-

signs and symptoms vary considerably, depending on the nature of the causative agent. If it is self-limiting, as with phenol or silver nitrate, pain is relatively slight until sloughing occurs, and the exposed tissues come in contact with the oral flora. Some agents such as aspirin and eugenol are associated with an early painful response. When the burn is reasonably severe, the coagulated mucosa can usually, though painfully, be separated from the underlying tissues ***(Lester .w., 1970).***

Diagnosis of burns of the oral mucosa :-

usually can be made on the basis of the history of the development, the duration, the appearance and the physical characteristics of the affected tissues. The coagulum usually can be removed fairly readily. Moniliasis, oral leukoplakia and oral lichen planus must be considered in the differential diagnosis. The lesions associated with syphilis should not present any problems in differential diagnosis ***(Chauvin .PJ et al., 1996).***

Classification of burns :-

Many classifications founds but the most used one depends on the depth of burn and divided into four groups which are:

A) First degree :-

This type of burn damages only the outer layer of skin (epidermis),which is composed entirely of epithelial cells. These burns are pink or red, dry and painful, sloughing the next day. The skin does not blister, although slight swelling may occur ***(Sheridan RL et al., 1998).***

B) Second degree :-

This injury damages epidermis and a small portion of the underlying dermis, which contains blood vessels, nerve endings, sweat glands, hair follicles, and sebaceous glands. This is also where new skin cells are produced. Blisters are common with this type of burn. This burn blanches slowly and capillary refill is slow. These are red, wet and very painful ***(Suman OE et al., 2001).***

C) Third degree :-

This burn completely destroys both epidermis and dermis. The skin is dry, leathery in consistency, and firm, and can look white, red, brown or black. The burn does not blanch when pressed, is insensitive to touch and looks waxy ***(Sheridan RL., 2000).***

D) Fourth degree :-

These wounds involve underlying subcutaneous tissue, tendon or bone. Such burns frequently have a charred appearance ***(Jackson DM., 1953).***

Chemical burns of the oral mucosa :-

Chemicals placed on the oral mucosa may have a caustic action, resulting in necrosis and sloughing . These areas appear in the oral cavity as painful white lesions. This can be happen accidentally or by attempted suicide or criminal intent. most changes can be found in the oro-pharynx, but the lips may be involved as well. Acids usually cause a cauterized scurf that has a characteristic color. Worse than the damage resulting from acids are those caused by alkali . The affected tissues swell and become transparent and "soapy". Healing leads to sever scar formation and sometimes speech disorder. Other commercially available Toothache drops contain creosote, or a related phenol derivative that has a caustic action on the oral mucosa and many dental medicaments such as silver nitrate, eugenol, paraformaldehyde, phenol, and tincture of iodine also cause painful burns and white lesions of the gingiva and the oral mucosa when they accidentally come in contact with dry oral tissues ***(Chauvin .PJ et al., 1996).***

Aspirin:-

Pharmaceutical drugs are more commonly referred to as a perscription drugs have serve a good cause in the lives of many people. Modern medicines can and are both abused and used for the betterment of man. Pain is an uncomfortable feeling and sensation that one would quickly want to get rid of. This pain needs to be eased by taking a form of pain medication. For this pain, aspirin is the remedy. It is a synthetic chemical compound bearing the chemical name acetylsalicylic acid. However, its injudicious use can produced local as well as systemic undesirable effects ***(Kawashima .Z. et .al, 1975 and Hoffman., 1998).***

Aspirin-containing compounds are a common source of burns of the oral mucosa, aspirin tablets are used mistaken by many people as a local obtundant, especially for the relief of toothache, pulpitis, periostitis, or a periapical abscess. Although efficacious if used systemically, they are particularly harmful to the oral mucosa if applied locally. The usual mode of local is to place the tablet against the offending tooth, allowing the cheek or lip to hold it in position, and to let it dissolve slowly. Within a few minutes a burning sensation of the mucosa will be noted, and Irregularly shaped, white, pseudo-membranous, painful lesions develop where the medicament touches the oral mucosa and the gingival tissues. Similar but milder burns can be produced by prolonged use of aspirin-containing chewing gum, and the margins of ulcers exposed to this topical analgesic often become white and thickened ***(William .G et al., 1970).***

Formocresol:-

The first recorded use of a formaldehyde-containing medicament came in 1874, when Nitzel used a tricresol formalin-tanning agent in 8,000 cases. however; the technique fell from favor some thirteen years later ***(Schwartz .EA., 1980).***

In 1904 Buckley described the treatment of putrescent pulps using a mixture of equal parts of Tricresol and Formalin (an aqueous solution of formaldehyde gas generally found to be equivalent to 38 percent w/w formaldehyde) on a cotton wool pellet that was hermetically sealed into the pulp chamber in two consecutive visits. He attributed the success of the procedure to the conversion of chemically irritating gases and poisonous ptomaines into nonirritating and nonpoisonous liquids and solids. The aim being to completely fix the radicular pulp, which was then theoretically sterilized and devitalized using an antiseptic and germicidal chemical, thereby preventing infection and internal resorption ***(Nunn .JH et al., 1996).***

Formocresol as a pulpotomy medicament:-

Formocresol was first advocated, as a disinfectant for root canals in endodontic treatment of permanent teeth due to it's bactericidal and pulpal fixation effects until Sweet pioneered its clinical usage in a multi-visit technique for the pulp therapy of primary teeth in 1930 ***(Sweet .C.A., 1930).***

Formocresol as a pulpotomy medicament has a long successful clinical history but, unfortunately its use in dentistry has become a controversial issue when reports demonstrating its wide distribution