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The Effect of Three Different Dressing Materials on Pain Relief of Symptomatic Teeth. Randomized Clinical Trial

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Abstract

Different types of materials were used in aim to reduce pain and to alleviate of symptoms. These materials have been used for decades like formocresol, cresatin, eugenol, CMCP and iodine-potassium because of their antiseptics and germicidal effects that should reduce the pain. In recent years the introduction of pulpotec material that contain both formalaldehyde and dexamethasone acetate may provide both antiseptics and sedative effect of steroids.

The aim of this study is to evaluate the use of pulpotec and compare it with other most common materials used in pulpotomy as emergency treatment dressings (camphorated monochlorphenol and eugenol).

Materials and methods: sixty patients (26 meals and 45 females) were included in this study after their approval to the treatment protocol. The three materials were applied. All the participants of the three groups recalled after eight hours, twenty-four hours and seventy-two hours. Results and conclusion: the pulpotec group shows complete relief of pain 100% will the other two groups show mild to severe pain after one to three days. On conclusion, steroids can be used locally to provide alleviation of pain in symptomatic teeth due to their anti-inflammatory effect and reduce their side effect. That will diminish the use of systemic antibiotics.

Key words: Emergency treatment, pulpotec, dexamethasone.

Introduction

In Iraq, like many of the third world countries majority of patients seek dental care are suffering from pain, we don't have a checkup system. So, for pain that regarded root canal system most of patient came to the clinic with severe night pain (Ultimate toothache). This pain may make the patient reach a point of hysteria, which can be relieved temporarily with an ice cube or cold water [1], to manage this condition and reduce that pain the dentist should do root-canal treatment. On other hand with that type of pain this might be difficult and painful to the patient to do endodontic treatment. So managing the pain with endodontic emergencies make it easier and more comfortable endodontic procedure without pain and pathologies . That's why many of Pharmacological management used systemic

administration of nonsteroidal anti-inflammatory drugs and ibuprofen sodium dihydrate[2] (Taggar et al. 2017) have been given as well as intracanal medicaments were used. To prevent and alleviate of pain during endodontic therapy many treatments have been applied these include: Flare-ups in Endodontics[3]:

1. Occlusion relief.
2. Pulp chamber and root canal premedication.
3. Root canal drainage
4. Overlay tissue excision

Most intracanal medicament are used for their antimicrobial effect because microorganism responsible for inflammation. It would appear that the placement of intra canal antiseptics and germicides should reduce indirectly posttreatment pain[3]. Properties of formcresol, cresatine, eugenol, camphorated monochlorphenol and iodine-potassium iodide have been studied; the eugenol liquid effect is to provide an abundant effect which help the pulp relaxation after tooth preparation trauma . Eugenol has anti-inflammatory effect when it is in contact with healthy tissues (Herrera et al. 2016). But none of them appear to be practical in symptomatic teeth but still used by the dentist. The use of corticosteroids as anti-inflammatory effect may be due to drugs ability to retard the release of lysosomal enzymes from the cells and inhibition of the fusion of this enzyme with the target membrane[3] (Samuel Seltzer and Irving J, 2004)

In addition, the inhibition of the the liberation of free arachidonic acid by the effect of corticosteroid from the phospholipid of the cell membrane by phospholipase. Cortisone have also the ability to relief pain, which may be due to its effect to stabilize membrane. Although the real mechanisms is not well known. Many researchers stated that the placement of corticosteroid into root canal could control pain successfully [4,5,6,7].

The corticosteroid disadvantage in endodontic therapy may be due to their effect on inflammatory cells which will be reduced in the periodontal ligament because of the effect of this drug due to the interference with the phagocytosis and protein synthesis ,as a consequence the infection may be more rampant and repair may be impaired or delayed[3].

pulpotec (Produits Dentaries S.A, - Vevey, Switzerland) a non resobable, radiopaque paste composed of powder and liquid (powder: polyoxymethylene, iodoform, and zinc),(liquid: dexamethasone acetate, formaldehyde, phenol, guaiacol, and subs\idiary substances), used in both permanent and deciduous teeth as along treatment of pulpitis by pulpotomy in vital molars [8].

The aim of this study is to evaluate and compare three of most common type of dressing materials used to relief of pain in symptomatic teeth (pulpotec, camphorated Monochlorphenol and eugenol with camphorated monochlorphenol).

Material and methods

This study compared three different types of materials as a dressing and pain relief for patients with acute pulpalgia, ultimate toothache "those teeth which are with or without a cut apical periodontitis with a diagnosis of irreversible pulpitis " in the maxillary and mandibular first molar. Sixty patients (26 meals and 34 females) were included in this clinical study at age 20-35 years. The patients were divided into three groups according to the dressing materials:

1. Group one (G1): pulpotec as dressing material.
2. Group two (G2): eugenol liquid with camphorated monochlorophenol.

3. Group three: camphorated monochlorophenol.

Before starting treatment, the used material was clarified to the patients who signed a form of agreement to treatment. After anesthesia has been given to the patient, pulpal exposure was done by using fissure bure with high speed hand piece and remove the pulp chamber roof to get access to the pulp then the bleeding was stopped using a cotton pellet with pressure for 3 minutes, after that the dressing material was inserted without pulpal extirpation. The first group (G1) receive pulpotec cream as addressing material the material was mixed according to the manufacture instructions. The cotton pallet was sucked with pulpotec cream and delivered with a tweezer then temporary filling (readymade zinc oxide eugenol filling) the recall was after 8hours, 24 hours, 72 hours (three days) and one week (for the three groups). The root canal treatment was delivered in one week. The second group (G2) received a cotton pellet with camphorated monochlorophenol, first the cotton was dried with a 2*2 inches sterile gauze then applied with a tweezer, and the cavity was closed with temporary filling material. The third group (G3) received a cotton that contains eugenol liquid with camphorated monochlorophenol, the eugenol liquid was dispensed with a dropper on clean cement slap with one drop of camphorated monochlorophenol then mixed together using cement spatula the cotton pellet were dipped in that mixture dried with 2*2 inches sterile gauze then delivered to the cavity by a tweezer after that a temporary filling was applied. The effect of the treatment was evaluated depend on patient complain and clinical findings. The chi-squire was used for statistically analysis.

Result

The result shown in tables (1, 2, 3, 4 and5). In the table 1 and 2 the majority of patients show relief of pain after one hour and eight hours respectively. The P value (p= 0.105 NS) presenting no significant difference between three groups even after eight hours. On other hand there was high difference between groups after one day P value (P=0,000 HS), after three days, especially in second group (eugenol liquid with camphorated monochlorophenol). Six patients need emergency recall. After seven days the difference was highly significant P value (p=0.000 HS) between groups the second and the third patient from both groups need emergency recall this can be seen even after seven days as in tables 3,4 and5.

Discussion

With the absence of a standard objective method for measuring pain which is a subjective parameter and is dependent on so many factors like age, sex and type of the tooth. Segura et al (2008)[9] found in their research no significant difference between gender or aged groups. Researchers have considered that the situation of the case as painful only if the patient call the office with a complaint or in need of an emergency appointment[10].

Segura et al (2009)[9] found that root canal treatment in teeth with irreversible pulpitis and acute apical periodontitis was more painful they also conclude that the type of teeth, age and treatment length were factors associated with pain risk during procedure. Big by et al[11] in 2006 they used intra osseous injection of 4% with 1:100000 epinephrine to reduce pain and achieving pulpal anesthesia in mandibular molar teeth if inferior alveolar nerve block fails in a patient

with an irreversible pulpitis. When the dentists do not have time to do a pulpotomy over complete instrumentation is the lack of sufficient time to clean and shape canal systems he or she can do emergency pulpectomies or pulpotomies. The data that strongly suggest the use of a broad spectrum antibiotic such as amoxicillin with metronidazole and Augmentin for a polymicrobial endodontic infection. Inappropriate use of antibiotics drives antibiotic resistance and misuses resources[12].

It has been observed when using steroid as a dressing locally inside the pulp chamber with patients that have symptomatic pulpitis and acute periodontitis will reduce the pain significantly and give relief pain after one-hour[13]. In this study the use pulpotec as a dressing for pain relief of patients that have irreversible pulpitis and acute apical periodontitis since pulpotec contain steroid in its ingredients so that the pain was reduced at the same day, no pain recorded after 7 days until the next visit when patient received chemo mechanical debridement and root canal filling these findings similar to bastoon et al 2013[8]. Aminoshariae et al. in 2016 found that preoperative administration of steroids significantly reduces pain[14]. Mousavi et al. (2016) found that direct application of dexamethasone to the vital pulp exposure, before application of capping materials, may affect the underlying tissue inflammation and reparative events leading to tissue healing. They stated the application of dexamethasone yield more cases with no inflammation and less moderate inflammation[15]. Naveen et al (2014) concluded that the wise used steroids with the combination of antibiotics would not have any adverse effects like systemic dose[16]. (The use of steroids systemically will have immunosuppressive effect). For the second group who received champherphenol and eugenol and the third group with champherfenol these groups the patients had severe pain after 3 days and need emergency call for full pulp extirpation and root canal treatment. This was the same result of Maddox et al in 1977 when they compare different types of intra canal medicaments (CMCP, formocresol, eugenol, Cresatin, iodine-potassium iodide, and a dry cotton pellet) the result was that these medications have no difference between each other in the ability to control or reduce pain or when compared to a dry cotton pellet[17].

Conclusion

In conclusion the significant difference was in the use of pulpotec as a dressing for teeth with symptomatic and sever pain that's may be because the presence of steroid with the content of pulpotec. As the benefits of steroids in reducing of inflammation and subside the pain. In order to reduce using of antibacterial medications and the use of systemic steroids and the side effects of both medications. there was no significant difference between champherphenol and eugenol with champherphenol as intra canal medicament with symptomatic teeth.

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Table (1): After one hour.

Groups	No pain	Mild pain	Severe pain
pulpotec	20 (100%)	0(0%)	0(0%)
Eug+CMCP	20 (100%)	0(0%)	0(0%)
CMCP	20 (100%)	0(0%)	0(0%)

Table (2): After eight hours.

Groups	No pain	Mild pain	Severe pain
pulpotec	20 (100%)	0(0%)	0(0%)
Eug+CMCP	15 (75%)	4 (20%)	1(5%)
CMCP	15 (75%)	5(25%)	0(0%)

X^2=7.667, d.f.=4, p-value=0.105(NS)

Table (3): After twenty-four hours.

Groups	No pain	Mild pain	Severe pain
pulpotec	20 (100%)	0(0%)	0(0%)
Eug+CMCP	3 (15%)	11 (55%)	6(30%)
CMCP	6 (30%)	14(70%)	0(0%)

X^2=42.074, d.f.=4, p-value=0.000(HS)

Table (4): After 72 hours.

Groups	No pain	Mild pain	Severe pain
pulpotec	20 (100%)	0(0%)	0(0%)
Eug+CMCP	0(0%)	3 (15%)	17 (85%)
CMCP	0(0%)	4(20%)	16(80%)

X^2=60.26, d.f=4, p-value=0.000 (HS)

Table (5): After seven days.

Groups	No pain	Mild pain	Severe pain
pulpotec	20 (100%)	0(0%)	0(0%)
Eug+CMCP	0(0%)	0(0%)	20(100%)
CMCP	0(0%)	0(0%)	20(100%)

x^2=60, d.f=4,p-value=0.000(HS)