REVIEW ARTICLE

FLARE UPS IN ENDODONTICS

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Abstract : The endodontic flare-up is fortunately a relatively rare occurrence, but the sudden increase in patient symptoms necessitates a focussed and active treatment plan. This review article discusses the various facets of the flare-ups and how to manage the patient once the flare-up occurs.

KEYWORDS : Flare up; Antibiotic; Analgesic; Systemic; Intracanal medicament

INTRODUCTION:

An interappointment flare-up is an unhappy event. After a root canal treatment appointment, the patient calls or returns to the dentist's office in distress. This is upsetting to both the patient and the dentist and is disruptive to a busy practice.

DEFINITION

According to American Association Of Endodontists, *An Endodontic Flare-Up* can be defined as an acute exacerbation of radicular pathosis after initiation or continuation of root canal therapy.

The inter appointment flare-up has the following criteria:[1]

I. Within a few hours to a few days after an endodontic procedure, a patient has significant increase in pain or swelling or a combination of the two.
II. The problem is of such severity that the patient initiates contact with the dentist.
III. The dentist determines that the problem is of such significance that the patient must come for an unscheduled visit.
IV. At the visit, active treatment is rendered. That may include incision for drainage, canal debridement, opening the tooth, prescribing appropriate medications, or doing whatever is necessary to resolve the problem.

Although the signs and patient symptoms may be severe in magnitude, they are rarely serious (i.e. not life threatening). They tend to be localized and do not usually involve structures other than those oral.

INCIDENCE

The overall incidence of flare-ups is low. The studies with the best experimental design show that the incidence, when considering all pretreatment diagnosis together, ranges from 1.5% to 5.5%.[1,2] The incidence of flare-up increases in direct relationship to the severity of the patient's preoperative pathosis and signs/symptoms. The lowest frequency of occurrence is generally with a vital pulp without periapical pathosis; the highest frequency is with patients who present with more severe pain and swelling, particularly with pulp necrosis and acute apical abscess.

RISK FACTORS

Age groupings and gender have been examined. Most studies show age to be an insignificant factor, showing no increases in flare-ups when analyzing groups by decades.[1,3] Several studies evaluating large numbers of patients found higher numbers of post-treatment pain and flare-ups in females.[1,3,4]

Pulp and periapical status are important factor in flare up. Teeth with a vital pulp have relatively few flare-ups. teeth with pulpal necrosis has a much higher incidence of flare-ups. The periapical diagnosis of acute apical abscess and acute apical periodontitis, both painful entities, have been shown in most studies to also result in a significantly higher flare-up rate. In addition, the radiographic presence of a periapical lesion, particularly larger lesions, also serves as a risk factor for development of flare-ups. Importantly, a diagnosis of pulp necrosis and acute apical abscess, which includes pain and/or swelling, is much more likely to result in a flare-up than any other diagnostic pulp and periapical combination. These findings suggest that the immunological status of the periradicular tissue may predispose patients to develop a postendodontic flare-up. Interestingly, the presence of a sinus tract virtually ensures that a flare-up will not occur. Although this is indicative of an abscess, apparently the tract functions as a relief valve, releasing pressure, reducing tissue levels of inflammatory mediators, and thereby preventing the sudden increase in pain.[1,5]

As a predictor of flare-ups, signs and symptoms have an important relationship, considerably more likely to experience an interappointment flare-up than a patient without prior symptoms. The same is true for preoperative swelling. It is intriguing that patients in pain, which would also increase stress levels, have been shown to have adversely impacted immune functions.[6]

ETIOLOGY AND CAUSE

The precise cause of the flare-up is unknown. There are different factors that have been speculated to precipitate the flare-up including immunologic response, infection, or physical tissue damage, or a combination of the three. Treatment factors that may trigger a flare-up include introduction of bacteria, or chemical and physical stimuli into the periapical tissue. These treatment factors likely interact with primed immune cells present in periapical tissue since flare-ups are much more common in teeth with apical pathoses as compared to teeth with vital pulps and normal periradicular tissue. Although speculative, it is logical that these injurious agents and their effects on periapical tissue act in combination. Although the role of the responsible species of bacteria are not totally clarified, it is

probable that these are important factors. To date, the only microbiologic study involving flare-ups used an intracanal sampling method.[7] It is uncertain, but likely, that bacteria recovered from the canal are similar to the bacteria found periapically with a flare-up that involves an abscess. Those recovered from the canals were primarily gram negative anaerobic in mixed culture.

PREVENTION

Many approaches and techniques to reduce the severity and incidence of post-treatment pain and flare ups have been attempted. Some of these involve complete debridement, multiple visit strategies, and administration of therapeutic agents. Other possible preventive strategies have included use of intracanal medicaments and reducing the occlusion. The therapeutic measures include the prescribing of antibiotics or anti-inflammatories (steroids or non-steroidal antiinflammatory drugs) or administering analgesics. Each of these above approaches will be reviewed as to evidence of effectiveness on decreasing the incidence of flare-ups.

Complete debridement

Although it would seem desirable and biologically advantageous to remove tissue remnants and bacteria from the canal space as, stated earlier, neither complete nor incomplete debridement appear to alter the development of post endodontic flare-up incidence.[1,8]

Intracanal medicaments

These agents have been studied as to their effects on post-treatment pain. A traditional and long-held belief was that certain substances placed in canals would decrease or prevent flare-ups. However, clinical trials do not support this belief.[9] Post-treatment pain is neither prevented nor relieved by medicaments such as formocresol, phenolics (CMCP, Cresatin, eugenol, beechwood, creosote), iodine-potassium iodide, or calcium hydroxide.[10] However, intracanal steroids[11] or NSAIDs[12] will reduce postoperative pain.

Antibiotics

Clinical trials have shown that prophylactic administration of antibiotics are unrelated to incidence or levels of post-treatment pain or flare-ups . Antibiotics are therefore contraindicated as a preventive measure, although it is evident that they are used extensively.[13] This is based on the misguided hope that antibiotics will minimize adverse symptoms.

Analgesics

Whether any class of analgesic (considering peripheral or central acting, opioid or prostaglandin-inhibiting) will prevent or minimize incidence of flare-ups is uncertain. It is unlikely that they would have this effect. Although one study showed analgesics to reduce the incidence of flare-up, another demonstrated the opposite[1].

TREATMENT

Psychological management

The patient is predictably and understandably upset and shaken by the sudden episode of pain or swelling. Reassurance is a critical, perhaps the most important, aspect of treatment. The patient is concerned and may even assume that treatment has failed and that extraction is needed. The dentist must explain that flare-ups do occur and are treatable. Next, the patient must be made comfortable by breaking the pain cycle.

Vital pulp

Flare-ups seldom occur in these situations, but when they do, the problem likely is related to tissue remnants that have become inflamed. Working lengths should be verified and the canals carefully cleaned with copious irrigation. A dry cotton pellet is then placed followed by a temporary restoration. The pain will usually subside rather quickly and predictably.

Necrotic pulp with no swelling

These teeth may develop an acute apical abscess (flare-up) after the appointment. The abscess is confined to bone and is generally very painful. The patient may have been asymptomatic (seldom) or symptomatic (usual) at the presenting appointment. At the flare-up emergency appointment, the same treatment procedure is followed. The tooth is opened and the canal is instrumented and irrigated with sodium hypochlorite. Occasionally, drainage will be established through the tooth. This drainage should be allowed to continue until it ceases. Then the canals are re-irrigated, dried, calcium hydroxide paste is placed and the access sealed. The tooth should not be left open to the oral cavity. Interestingly, it was recently reported that drainage from the tooth did not result in significant reductions in pain as compared to no drainage.[14] In both situations, symptoms required a few days to subside. If there is no drainage, the canals should be re-debrided, irrigated, medicated and closed. There seems to be little benefit in apical trephination.[15]

THERAPEUTICS

Intracanal medicaments

There is no demonstrated benefit in placing medicaments or any other substance in canals to help resolve a flare-up.

Local anesthetics

Blocking the sensory nerves to break the pain cycle is important, both psychologically and neurophysiologically.[16] Particularly useful are long acting anesthetics such as etidocaine or bupivacaine.[17] In addition to their duration of tissue anesthesia, these agents produce a prolonged analgesic effect.

Systemic medications

Systemic drugs are analgesics, steroids, and antibiotics. NSAIDs provide an analgesic but probably little-to-no anti-inflammatory effect in these acute situations. For severe pain, a combination approach is most effective. An opioid, such as tramadol, codeine or oxycodone, and a non-steroidal agent seem to work in tandem. One combination, flurbiprofen (100mg loading & 50mg each 6h) and tramadol (100mg each 6h) was shown to be effective in managing pain in emergency patients[18]. Steroids, administered in a single dose (e.g. 4–6mg of dexamethasone) may also be of benefit[19]. This would be to control a presumptive immune-mediated hypersensitivity reaction, although this mechanism has not been confirmed in flare-up patients. Although antibiotics are widely used in treating a localized abscess, prospective

clinical trials show they are of no benefit for reducing postoperative pain or risk of developing a flare-up.[20,21] However, they may be of help if there is a diffuse, rapidly spreading cellulitis into fascial spaces. This usage is empirical, there have been no clinical trials determining the efficacy of antibiotics in the presence of cellulitis.

CONCLUSION

The event of an endodontic flare up presents the dentist with the patient in severe pain who requires immediate management. The present article discusses possible treatment modalities to combat this unfortunate endodontic emergency.

The art and science of endodontic diagnosis and treatment have undergone a tremendous scientific and technological evolution. As a result the dental profession is prepared and able to remedy one of the most painful and feared affiction with compassion, knowledge and skill.

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