

Medication Related Osteonecrosis of Jaw (MRONJ): A Case Report of the Synergistic Effect of Pentoxifyllin and Tocopherol (PENTO Protocol) in Treatment of MRONJ

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ABSTRACT

Osteonecrosis of jaw is a condition in which bone cells die due to various causes. It has several types one of them is Medication related osteonecrosis of the jaw (MRONJ). MRONJ significantly affects the patient's quality of life and leads to a significant percentage of mortality. The treatment of osteonecrosis can be conservative, which aims to be beneficial for the patient's quality of life, and surgical, which involves debridement of the necrotic bone. This article describes a case of a 60 years old female patient with necrotic segment of her mandibular jaw with no pain and a history of taking hormonal drug after stopping chemotherapy for 1 year. We have laid down a new non-surgical well tolerated treatment modality with minimal side effects.

Keywords: Osteonecrosis of Jaw; Pentoxifyllin; Tocopherol; MRONJ

Introduction

Osteonecrosis of the jaw is a rare condition in which part of your jawbone exposed through your gum. This area does not receive blood, causing bone cells to die. It is classified as drug-induced jaw osteonecrosis, osteoradionecrosis, traumatic, non-traumatic, and spontaneous osteonecrosis [1]. Medication related osteonecrosis of the jaw (MRONJ) is a severe adverse drug reaction, consisting of progressive bone destruction in the maxillofacial region of patients. ONJ can be caused by two pharmacological agents: Antiresorptive (including bisphosphonates (BPs)) and antiangiogenic [2].

Case Presentation

A 60 years old female patient came to department of Oral Medicine and Periodontology with a chief complaint of foul odor and a bad esthetic due to greyish discoloration in the lower left mandibular

gum. This condition noticed 3-month ago. The patient gave history of breast cancer and chemotherapy that was stopped 1 year ago and after that she is on Hormonal drug (Arimidex1mg) and a drug for osteoporosis called (bonecare1mcg). Although, she is Hypertensive on Aldomet 250 mg, And diabetic Type II on Amaryl 2mg with last HgA1C test result 8.8%. On Intraoral Examination we found a large Irregular area in lower left mandible covered by necrotic membrane extending from lower left central to the left second premolar and from the free gingival margin to the alveolar mucosa labially and lingually with grade III mobility of all these teeth (Figure 1), and another small greyish area in IDP between upper two centrals with no mobility (Figure 2). All these areas are painless and not surrounded by redness. On Extraoral examination for submental and submandibular lymphnodes We found the submental and left submandibular LNs palpable, soft, tender and mobile.



Figure 1: Clinical photograph showing a large irregular necrotic area covered by necrotic membrane causing foul Odor of 3-month duration and the Related teeth has a grade III mobility.



Figure 2: Clinical photograph showing a small necrotic area in the IDP between upper two centrals.

A CBCT radiograph was performed and it showed a sequestration of bone under the lower left central and lateral (Figure 3). The first step done in the treatment of this condition was mechanical removal of the necrotic membrane. Then prescribed an H₂O₂ Mouthwash (10%) (4 times per day), flumox 1g IM Injection (once per day), and flagyl 500(1 tab 2 times per day) for 3 weeks to get rid of anaerobic bacteria. In order to avoid secondary fungal infection a nystatin oral drops 4 times per day were prescribed for one week. then we pre-

scribed Trental 400 1 tab 2 times per day and vitamin E 1g 1 tab per day for 1.5 month to increase blood supply and promote healing. After the size of lesion was regressed and signs of healing showed up (Figures 4 & 5) we decided to extract all teeth with grade III mobility (left central to left second premolar) and the bone sequestrum fall by itself (Figures 6 & 7). The socket left to heal and follow up done after 10 days (Figure 8) and she is still on trental and Vit E even after complete healing approached (Figure 9).

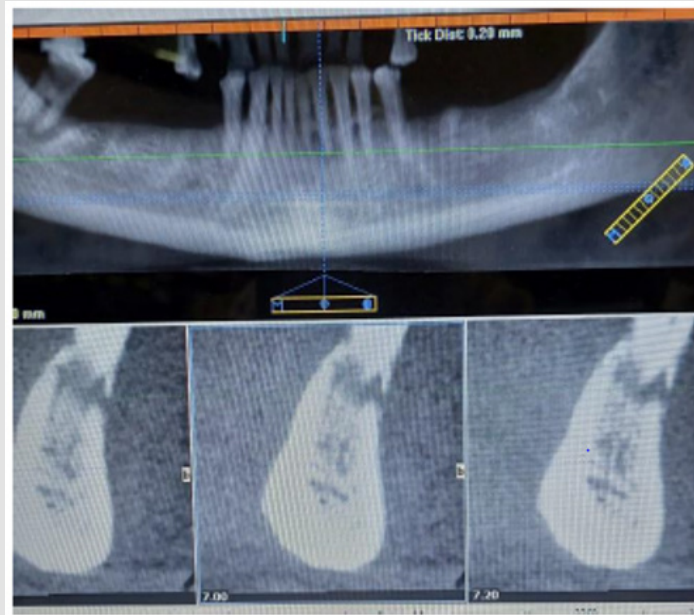


Figure 3: CBCT cross sectional showing sequestration of bone under lower left central and lateral.



Figure 4: Healing after 3 weeks of using trental and vit E.



Figure 5: Healing after 1.5 month of using trental and vit E.

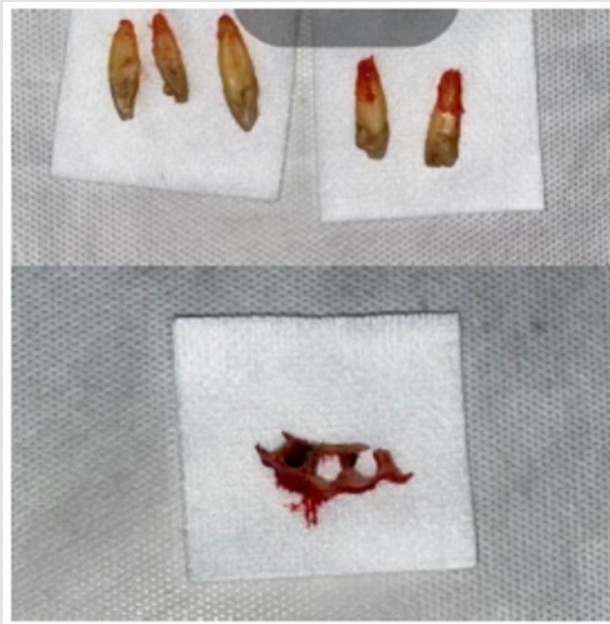


Figure 6: Extracted teeth and the sequestrum.



Figure 7: Extraction socket with normal bleeding.



Figure 8: Healing of Extraction socket after 10 days.

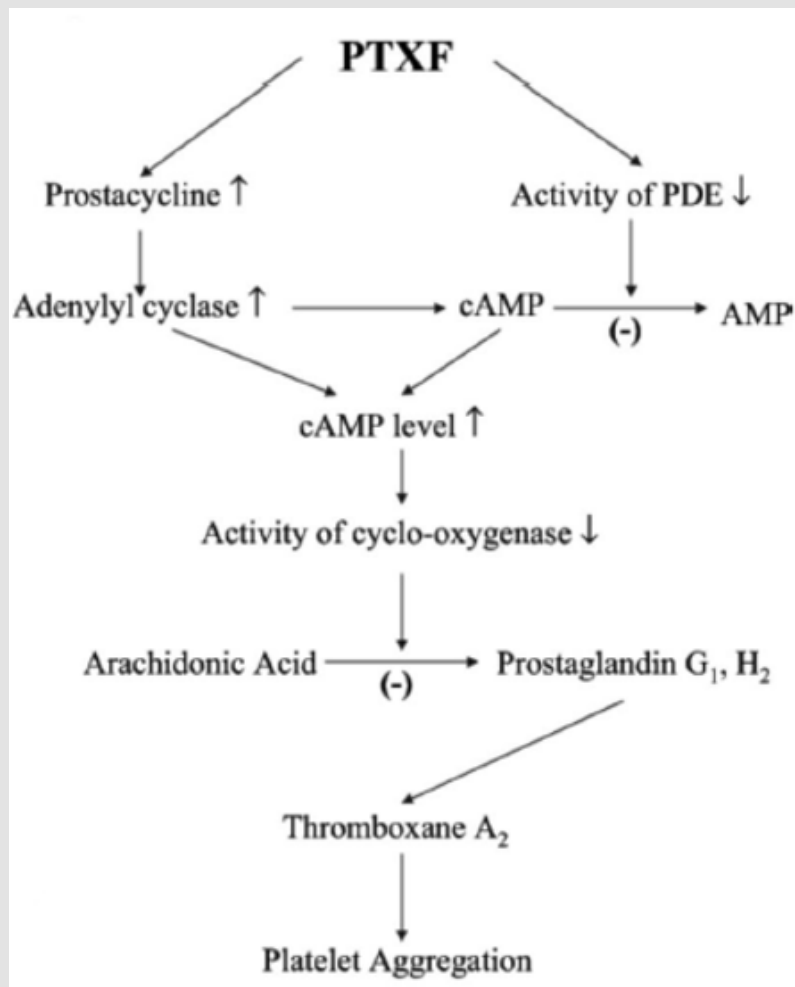


Figure 9.

Discussion

The mechanism of action of Trental (Pentoxifylline) is decreasing viscosity of blood by decreasing erythrocyte aggregation and stimulating fibrinolysis to reduce plasma fibrinogen concentrations. It also increases red blood cell flexibility by increasing erythrocyte ATP and cyclic nucleotide levels. In addition, it exerts vasodilatation by inhibiting PDE and increasing cAMP, which also inhibits platelet aggregation, decreases leukocyte adhesion to endothelial cells, and increases prostacyclin production [3]. All these effects enhance the ability of blood to flow through peripheral vessels. Tocopherol (Vit E) produces an antioxidant effect to protect cell membranes from lipid peroxidation. In addition, it acts as anti-inflammatory and inhibits platelet aggregation. Also, it has an immune-enhancing activity and stimulates bone remodelling. So, the PTX and tocopherol combination (PENTO protocol) has a positive synergistic effect in treating osteoradionecrosis, MRONJ, and osteomyelitis [4].

Conclusion

Medication-related osteonecrosis of the jaw (MRONJ) is described as a debilitating condition in which patients experience progressive bone destruction in the maxilla and/or mandible after exposure to certain drugs. This case report draws attention to the PENTO protocol as a well-tolerated, non-surgical, and non-expensive treatment for MRONJ with minimal side effects.

Informed Consent

Written informed consent was obtained from the patient.

Conflicts of Interest

There are no conflicts of interest.

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