



“BISPHOSPHONATE RELATED OSTEONECROSIS OF THE JAW”

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ABSTRACT

Introduction: Bisphosphonate drug is frequently used in United States mainly for post-menopausal problems in women suffering from osteoporosis or its history. Bisphosphonate therapy may result in bisphosphonate-related osteonecrosis of jaw (BRONJ).

Case Report: A 51 year old Female came to the Department of Periodontology, Teerthanker Mahaveer University India, with the chief complaint of pain and hard bony lesion bilaterally on the palatal aspect of molars in relation to #17,18 and #27,28 with foul odour. The pain was intermittent in nature, which aggravates on eating any hot food or liquid and gets relieved with cold. She was under treatment for osteoporosis following menopause with bisphosphonates since 5-6 years.

Discussion: The main pharmacological action of Bisphosphonates is to inhibit the bone resorption, mediated by -

1. decreased function of osteoclasts,
2. inhibition of calcification and
3. reduction of inflammatory reaction in the joints.

Bisphosphonates get accumulated mostly in the bone matrix and under osteoclasts. This is the primary effect of Bisphosphonates on bone surface and in osteolytic lesions where the number of osteoclasts is increased. Bisphosphonates are resistant to hydrolysis under acidic medium or by pyrophosphatases.

Conclusion: The severe occurrence of BRONJ in palatal aspect of molars are less commonly seen and reported. It is seen more in the Mandibular regions.

KEYWORDS :

INTRODUCTION

Bisphosphonate drug is frequently used in United States mainly for post-menopausal problems in women suffering from osteoporosis or its history. Bisphosphonate therapy may result in bisphosphonate-related osteonecrosis of jaw (BRONJ).

BRONJ is described as the exposure of bone in the maxillofacial region persisting for more than eight weeks in a patient who is taking, or has a history of use of bisphosphonate with no exposure to radiation therapy to the head and neck region. The prevalence of BRONJ depends on –

1. the mode and frequency of administration,
2. drug potency,
3. duration of treatment, and
4. other factors.¹

The risk factors are Periodontitis, traumatic injury from ill-fitting dentures and dental surgery commonly affecting the mandible than the maxilla and frequently involving tori or other bony protuberances.²

Oral Bisphosphonates like Alendronate (Fosamax), Risedronate (Actonel), Ibandronate (Boniva) are used frequently for the treatment of osteoporosis in women following menopause. Many physicians, patients and even dentists do not know the dental side effects of these drugs especially after long term administration. Avascular osteonecrosis of the jaws may develop after non traumatic tooth extraction and in severe cases adjacent vital structures get invaded in patients on Bisphosphonates leading to various complications.³

This report describes the side-effect seen on the palatal aspect bilaterally in a diagnosed bisphosphonate induced osteonecrosis patient.

CASE REPORT

A 51 year old Female came to the Department of Periodontology, Teerthanker Mahaveer University India, with the chief complaint of pain and hard bony lesion bilaterally on the palatal aspect of molars in relation to #17,18 and #27,28 with bad odour. The pain was intermittent in nature, which aggravates on eating any hot food or liquid and gets relieved with cold. She was under treatment for osteoporosis following menopause with bisphosphonates since 5-6 years.

She was in good health, with no history of radiation or any metabolic diseases.

The lesion (as shown in Fig 1,2 and 3) occurred few months back and slowly increased in size. The lesion started with exposure of the palatal bone related to the molars of maxilla bilaterally with recession of gums. The lesion was extremely painful and the intensity of pain gets aggravated with hot food or liquid, with bad odour and erythema. On palpation, the lesion was hard, bony and painful.

SIDE EFFECT OF BISPHONATES

A serious complication with the use of bisphosphonates is bisphosphonate-associated osteonecrosis of the jaw (ONJ) often described as exposed bone on the jaws persisting for more than a month with no history of radiation or any malignancy in the jaw. It is often triggered by dental extractions or any trauma like from poor retentive dentures. Its severity ranges from mild exposure of bone to necrosis of jaw with severe radiating or localised pain along with tissue infection and severe disability. The low potent form of necrosis are more commonly associated with bisphosphonates, but all form or stages of BRONJ may occur for patients.

MANAGEMENT

Patients with established BRONJ are best treated by Periodontist along with the patient's physician. Treatment of BRONJ is not aggressively done. The use of 0.12% chlorhexidine for oral rinse along with localized drug delivery of antibiotics and NSAIDs for soft tissue pain and Enzymes for swelling is indicated. Oral Surgery should be considered only to remove the dead sequestrae or in extreme and severe painful stage of BRONJ – complete removal of the jaw may be indicated.

DISCUSSION

Bisphosphonates are drugs used in the treatment of many skeletal disorders such as osteoporosis, Paget's disease, bone metastases, hypercalcaemia of malignancy and bone pain¹. The Bisphosphonates are used to inhibit the bone resorption, caused due to decreased osteoclastic function, inhibition of calcification and reduction of inflammatory reaction in the joints. Bisphosphonates get accumulated mostly in bone matrix under osteoclasts.

This is the main reason for the primary effect of Bisphosphonates on bone surface and in osteolytic lesions where the number of osteoclasts is increased. Bisphosphonates is highly resistant to hydrolysis under acid conditions or by pyrophosphatases.⁴

BRONJ is described as exposed bone in the maxillofacial region persisting for more than a month in a patient with history of

bisphosphonate with no exposure to radiation in the head and neck.⁵ In 2011, the American Dental Association Council of Scientific Affairs proposed the term antiresorptive agent-induced osteonecrosis of the jaw (ARONJ), to include ONJ cases associated with bisphosphonates, as well as cases associated with other antiresorptive agents; however, we have used the term BRONJ since bisphosphonate was the only antiresorptive agent that the patient reported taking.⁶

CONCLUSION

The spontaneous occurrence of BRONJ in palatal aspect of molars is not commonly seen or reported with no history of exposure to radiation or trauma or infection caused due to surgeries or extraction of tooth. The use of Bisphosphonates should be considered with regular follow ups of the patients by the Dentist as well as there Physicians.



Figure 1 – Lesion Associated With The 1ST, 2ND and 3RD Molar Of 2ND Quadrant. Bone Exposed With Inflammation.



Figure 2 – Bilateral View Of The Lesion Associated With The Molars.



Figure 3 - Lesion Associated With The 3RD Molar Of 1ST Quadrant. Recession With Inflammation.

Conflict Of Interest : NIL

REFERENCES:

1. Dwight E. McLeod et al. Spontaneous Bisphosphonate Induced Osteonecrosis of a Mid-Palatal Torus: A Case Report. *Clinical Advances in Periodontics*; Copyright 2013 DOI: 10.1902/cap.2013.120106
2. Marx RE. Pamidronate (Aredia) and zoledronate (Zometa) induced avascular necrosis of the jaws: a growing epidemic. *J Oral Maxillofac Surg* 2003;61:1115-1117.
3. Lau EMC, Sambrook P, Seeman E, Leong KH, Leung PC & Delmas P Guidelines for diagnosing, prevention and treatment of osteoporosis in Asia. *APLAR Journal of Rheumatology* 2006; 9: 24-36.
4. Dr. Albert MP Lee. Dental Side Effects of Oral Bisphosphonates. *VOL.13 NO.11 NOVEMBER 2008*
5. Ruggiero SL, Dodson TB, Assael LA, Landesberg R, Marx RE, Mehrotra B. American association of oral and maxillofacial surgeons position paper on bisphosphonate-related osteonecrosis of the jaws—2009 update. *J Oral Maxillofac Surg* 2009;67(5 Suppl):2-12.
6. Hellstein JW, Adler RA, Edwards B, Jacobsen PL, Kalmar JR, Koka S, Migliorati CA, Ristic H; American dental association council on scientific affairs expert panel on antiresorptive agents. Managing the care of patients receiving antiresorptive therapy for prevention and treatment of osteoporosis: executive summary of recommendations from the American dental association council on scientific Affairs. *J Am Dent Assoc* 2011;142:1243-1251.