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Research Article

## A CASE REPORT: ZOLEDRONIC ACID INDUCED JAW OSTEONECROSIS IN PATIENT WITH BONE METASTASIS A RELATIVELY RARE SIDE EFFECT

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**Abstract:**

**Introduction:** Jaw osteonecrosis (JON) is an infrequent side effect observed in patients receiving bisphosphonate therapy for bone maintenance during bone metastasis conditions. Nitrogen based bisphosphonates(NBBP) like Zoledronic acid when given intravenous (IV) infusion have potent ability to develop jaw osteonecrosis as compared to oral therapy. For optimal therapeutic effects and patient compliance perennial administration of Zoledronic acid is preferred.

**Case Presentation:** we report a case of 80-year-old woman suffering from endometrial cancer with bone metastasis developed Jaw osteonecrosis( JON )after consecutive cycles Zoledronic acid infusion. On Examination revealed the Classical signs of Jaw osteonecrosis(JON)On reporting physician examined and discontinued the zoledronate infusion.

**Conclusion:** Jaw osteonecrosis(JON) occurs as a consequence of zoledronate perennial infusions. Risk is more in persons with poor oral hygiene due to infections.

**Key words:** Zoledronic acid, Jaw osteonecrosis, Perennial infusion, Poor oral hygiene.

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**INTRODUCTION:**

Bisphosphonates are the drugs used to prevent resorption and the skeletal debilities like fractures. Bisphosphonates inhibit post translational protein modification which **play** major role like control osteoclast biological activities in addition to bone fiber assembly ultimately leading to osteoclast apoptosis [1].

Some studies have showed that perennial Zoledronic acid infusion lessen bone resorption and escalate bone mineral density in women having osteoporosis after menopause, consequently reduce probability of fractures especially associated with hip and vertebra. This bisphosphonates regimen is favorably tolerated and has a more safety profile [2].

This case in this report recommends that perennial zoledronic acid infusions can lead to nitrogen-based bisphosphonate-related JON in elderly.

**CASE DESCRIPTION:**

A 80 year old patient, was admitted in female radiotherapy ward at government general hospital, Guntur. The present complaints states that she has a terrible pain in the right cheek for past one month and have swollen right buccal area making unable to open her mouth completely. Ulceration was seen in the alveolar area of third molar (Fig.2).

She also complained of purulent discharge from the area of ulceration. Patient had history of Endometrial cancer with bone metastasis and patient is diagnosed as stage IV B of endometrial cancer on 22<sup>nd</sup> January, 2017. Also with a history of radiotherapy. Patient is on monthly Infusion of Zoledronic 4mg since 23<sup>rd</sup> January, 2017.



Figure: 1 (Patient issued with an ADR alert card)

Currently she visited hospital for the 30<sup>th</sup> cycle of Zoledronic acid. Physical examination revealed painful swelling of right cheek with limited mouth opening. There is no history of dental surgery and trauma. Patient with history of poor oral hygiene. Physician who did oral examination and recognized

signs like buccal space infection and dental caries and suggested an Orthopantomogram (OPG) for further investigation. Orthopantomogram revealed necrosed lower jaw at right third molar region (Fig.3). Finally, she was diagnosed as jaw osteonecrosis. Physician discontinued the Infusion Zoledronic acid 4mg.



Figure:2 (ulceration above the right third molar region)



Figure:3 (Necrosis at right third molar region)

### DISCUSSION:

Bisphosphonates vigorously arrest osteoclasts. Osteonecrosis is due to the build-up of bisphosphonates while bone regeneration. Bisphosphonates are commonly used in aged people. Many hypothesis have been proposed to elucidate the pathogenesis of JON due to Zoledronic acid use. Few explaining about osteoclasts and other paying center of attention to angiogenesis inhibition. [3]

In this case poor dental hygiene and perennial use i.e.'s almost 29 cycles of Zoledronic acid infusion for two-year five months may account for Jaw Osteonecrosis(JON). The treatment was given for diagnosis and patient was discharged. In this case cause the causality was found to be a'' POSSIBLE'' according to World Health Organization-Uppsala Monitoring Centre (WHO-UMC) assessment scale.

### CONCLUSION:

Now a days Zoledronic acid (Nitrogen Based Bisphosphonate) widely used to manage the major threat of bone metastasis in cancer patients with advanced stage. They remarkably prevent skeletal complications and especially fractures<sup>(4)</sup>. Although Zoledronic acid is well abided and side effects are rare, long-term usage linked to Jaw Osteonecrosis, most prevalent in patients with bone metastasis, who have received Zoledronic acid (Nitrogen Based Bisphosphonate) intravenously.

### PATIENT COUNSELLING (Education):

Patient was educated about the side effect of Zoledronic acid and suggested follow-up visits for monitoring symptoms. Adverse drug reaction alert card was issued (Fig.1) to the patient and suggested to

show it to the concern physician, before taking any prescription related to cancer.

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### CONFLICT OF INTEREST:

The authors declare no conflict of interest.

### ABBREVIATIONS:

**JON:** Jaw Osteonecrosis; **NBBP:** Nitrogen Based Bisphosphonates; **IV:** Intravenous; **OPG:** Orthopantomogram; **WHO-UMC:** World Health Organization - Uppsala Monitoring Centre;

### SUMMARY:

Zoledronic acid have been reported to cause Jaw osteonecrosis, which is considered as a rare side effect. Discontinuation of medication will help to relieve the cheek pain, even though Zoledronic acid is needed for effective outcome in majority of patients with metastasis bone cancer. [5]

### REFERENCES:

1. Matthew t, Bart l, Sundeep k, Bisphosphonates: Mechanism of Action and Role in Clinical Practice; Mayo Clin Proc. 2008;83(9):1032-1045
2. Lars Rasmusson and Jahan Abtahi; Bisphosphonate Associated Osteonecrosis of the Jaw: An Update on Pathophysiology, Risk Factors, and Treatment; International Journal of Dentistry; Volume 2014, Article ID 471035(2).

3. Ian R, Jacques PB, Burk hard P, etal.; intravenous Zoledronic acid in postmenopausal women with low bone mineral density; n engl j med, 2002,vol. 346(9).
4. Ibrahim T, Barbanti F, Giorgio-Marrano G etal.; Osteonecrosis of the Jaw in Patients with Bone Metastases Treated with Bisphosphonates: A Retrospective Study; The Oncologist March 2008 vol.13 no.3;330-336.
5. Otto S, Pautke C, Vanden WT, etal.; Medication-related osteonecrosis of the jaw: Prevention, diagnosis and management in patients with cancer and bone metastases; Elsevier;September 2018 vol.69:177-187