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Osteonecrosis of the jaw and bisphosphonates

Low doses for osteoporosis seem to be safe



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Bisphosphonate associated osteonecrosis of the jaw is defined as exposed bone in the maxillofacial region for more than eight weeks in the absence of radiotherapy but the presence of bisphosphonate use. The condition is diagnosed clinically with exclusion of local malignancy. Other conditions may present in a similar manner, and these include spontaneous sequestration or lingual mandibular sequestration and ulceration, which is characterised by exposed necrotic bone at the level of the mylohyoid ridge of the lingual mandible. This condition is self limiting and heals spontaneously within three days to 12 weeks.¹

Other important risk factors for the development of osteonecrosis include local infection, chemotherapy, steroid use, trauma, and periodontal disease.² Bisphosphonates are commonly used in the management of skeletal complications of malignancy, and treatment with high dose bisphosphonates has been associated with an increased risk of osteonecrosis of the jaw in patients with cancer.³⁻⁷ In this population, the estimated incidence of osteonecrosis is between 1% and 15%, and it seems to be related to the dose and duration of bisphosphonate treatment.

In patients with osteoporosis, much lower doses of bisphosphonates are used, and a causal link has not been established between low dose oral or intravenous bisphosphonates and osteonecrosis of the jaw.⁸ The incidence seems to be between 1 in 10 000 and less than 1 in 100 000 person years of exposure,^{9,10} which may be similar to the incidence seen in the general population.¹¹

With increased awareness of bisphosphonate associated osteonecrosis of the jaw, cases of spontaneous ulceration are possibly being misclassified as this condition. Further prospective data are needed to quantify the incidence of osteonecrosis of the jaw in the general population and in those receiving high and low dose bisphosphonates.

Multiple factors have been implicated in the development of osteonecrosis of the jaw. The exact mechanism by which high doses of bisphosphonates increase the risk is not fully understood. Local trauma caused by a tooth extraction in the presence of impaired osteoclast function (which can be the result of several factors) may cause inadequate clearance of necrotic debris. Secondary infection may also facilitate the development of local osteonecrosis. Bisphosphonates may have toxic effects on local soft tissue and impair the function of epithelial and vascular cells, which may prevent soft tissue healing and closure after dental surgery and contribute to the development of local osteonecrosis.¹² Osteonecrosis of the jaw can present with local pain, soft tissue swelling, and inflammation, which can progress to fistulas and pathological fractures.

International strategies on prevention and treatment exist,

but they are based on expert opinion and anecdotal evidence because of the lack of prospective data. Recommendations emphasise the importance of an oral examination with radiographic visualisation of the mandible and maxilla before starting high dose bisphosphonates in patients with cancer. Treatment may need to be interrupted in the presence of a dental emergency, and this situation should be managed by the medical, dental, and oncology team.

Regarding prevention, it is important to emphasise good oral hygiene and semiannual dental assessment in all patients taking bisphosphonates. Patients should also be encouraged to stop smoking and limit alcohol intake. If possible, any necessary dental work should be completed before starting treatment with bisphosphonates. If a dental procedure is necessary, bisphosphonates should ideally be discontinued three months before the procedure and resumed after the surgical site has healed. Bisphosphonates should be stopped immediately before an emergency dental procedure and resumed once the surgical site has healed.⁸

Treatment of osteonecrosis of the jaw focuses on treating secondary infections, providing suitable analgesia, and ensuring appropriate nutritional intake—tube feeding should be considered if the oral lesions prevent food intake. Surgery is reserved for removal of necrotic debris with limited debridement. Further prospective studies are needed to provide evidence based guidelines on the prevention and management of this uncommon condition.

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