Preventive Strategies for Patients at Risk of Medication-related Osteonecrosis of the Jaw

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KEYWORDS

• Osteonecrosis of the jaw (ONJ) • Bisphosphonates • Antiresorptives • Risk • Prevention

KEY POINTS

- For patients at risk, information can be provided by the pharmaceutical manufacturer, pharmacist, prescribing physician, dentist, and oral and maxillofacial surgeon.
- Prevention strategies to reduce the incidence of osteonecrosis should be applied as soon as it is determined that a patient will be placed on antiresorptive medication.
- Proper screening involves a comprehensive oral examination with radiographs followed by oral hygiene instruction and necessary dental treatment; surgical techniques and adjunctive therapies that favor optimum healing of bone and soft tissue decrease the risk of osteonecrosis of the jaw.
- Because of the low incidence of osteonecrosis of the jaw, no dental procedures are absolutely contraindicated.
- The published evidence to date supports the following recommendations:

Comprehensive oral examination with appropriate radiographs
Oral hygiene instruction
Maintenance of good oral health
Completion of necessary dental treatment
Use of antibiotics before and after surgery
Use of antimicrobial mouth rinses
Drug holiday when indicated

INTRODUCTION

Oral and maxillofacial surgeons first recognized and reported cases of nonhealing exposed bone in the maxillofacial region of patients treated with intravenous (IV) bisphosphonates in 2003[1,2] (**Fig. 1**). Subsequently the same type of lesion was observed in patients taking oral bisphosphonate medication and recently other antiresorptive drugs and angiogenesis inhibitors. These lesions are now called medication-related osteonecrosis of the jaw (MRONJ).[3] Because of its recent observation and low incidence, this is a condition that is not well understood or well managed by many health care professionals. However, there are various levels of evidence that support different strategies that decrease the risk of osteonecrosis of the jaw (ONJ) (**Box 1**).

Various guides and recommendations exist on the prevention of ONJ; however, most information available to guide decision making has been derived from case series and retrospective

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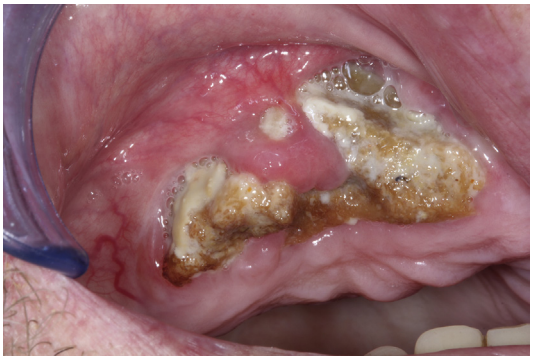

Fig. 1. Nonhealing exposed bone in the right maxilla of a 59-year-old patient with multiple myeloma treated with IV bisphosphonate therapy for 1 year. Patient history included the spontaneous exfoliation of an infected retained maxillary tooth root in the bicuspid region 2 months earlier.

Box 1
Strategies to prevent MRONJ

Patient awareness of risk
- Pharmaceutical manufacturer
- Pharmacist
- Prescribing physician
- Dentist
- Oral and maxillofacial surgeon

Dental screening
- Oral examination
- Radiographs
- Oral hygiene instruction
- Patient education

Treatment
- Surgery before initiation of medication therapy
- Elimination of inflammation/infection
- Fluoride application
- Prophylactic antibiotics before/after surgery
- Chlorhexidine rinses
- Drug holiday during healing phase
- Elimination of ill-fitting dentures

Potential risk-reducing modalities
- Plasma rich in growth factors
- Neodymium:yttrium-aluminum-garnet laser therapy
- Locally applied sodium bicarbonate
- Autologous platelet concentrate
- Parathyroid hormone therapy

observational and cohort studies. There has not been sufficient time to gather abundant evidence based on prospective randomized trials with adequate sample size to provide category 1 recommendations for the prevention of ONJ.

MRONJ is a painful, debilitating condition that is difficult to treat and even more difficult to cure. Benjamin Franklin's advice that an ounce of prevention is worth a pound of cure is particularly applicable to this condition.

Ideally, prevention strategies to reduce the incidence of MRONJ should be applied as soon as it is determined that a patient should be placed on antiresorptive medication. If this medication has already been initiated there are strategies that can still be considered by clinicians to decrease the risk of ONJ.

Prevention strategies involve multiple groups:

- Pharmaceutical manufacturers include this possible adverse event in the package insert of medication associated with ONJ. They advise that, "A dental examination with appropriate preventive dentistry should be considered prior to treatment with bisphosphonates."[4]
- Pharmacists can advise the patient of the risk of osteonecrosis and advocate the value of a consultation with a member of the dental profession in reducing this risk.
- Physicians prescribing antiresorptive or antiangiogenic medications should counsel patients on possible oral complications resulting from taking this medication and advise their patients to consult directly with a dentist or oral and maxillofacial surgeon. However, this does not seem to be happening. Migliorati and colleagues[5] recently conducted a single-center observational study involving 73 patients seeking routine dental care while taking bisphosphonates. Eighty-two percent said that they had not been told about the possible side effects of taking bisphosphonates. Participants reported having no knowledge of ONJ and reported that their physicians had not told them that they needed to inform their dentists that they were receiving bisphosphonate therapy.
- Dentists and oral and maxillofacial surgeons have a responsibility to be aware of the risks of antiresorptive medication and to be prepared to inform, educate, and treat these patients.
- Patients need to be compliant and follow the recommendations and instructions by their dentist/oral surgeon, especially those pertaining to the maintenance of good oral hygiene and use of antibiotics.