

# OSTEOPOROSIS AND THE EYE



Treatment for this degenerative condition can have adverse ocular side effects. Knowing what they are can help clinicians spot them early and address them quickly.

BY TRACY OFFERDAHL, PHARM.D, BPHARM, RPH; AND ALISSA M. COYNE, OD, FFAO

Systemic medications can produce many ocular manifestations and adverse ocular effects. Time is one of the best indicators for showing the true colors of a drug, both in terms of efficacy and toxicity, as the longer a drug has been available, the greater the number of patients using it.

New drugs enter the market and clinical practice every year, with 2018 being a record year of 59 new drug approvals.<sup>1</sup> Many new drugs are similar to previously approved drugs; however, there are typically several drugs each year that the FDA classifies as new molecular entities.<sup>1</sup> This consistently challenges practitioners in every medical discipline to be on the lookout for new adverse effects or for a different spin on an older adverse effect. This article takes an up-close look at the drug category bisphosphonates.

## BISPHOSPHONATES: AN OVERVIEW

Bisphosphonates are the mainstay therapy in the prevention and treatment of osteoporosis in both men and postmenopausal women, with additional indications including Paget disease, glucocorticoid-induced osteoporosis, malignancy-induced disorders of calcium and bone density, and inherited diseases such as osteogenesis imperfecta.<sup>2</sup> Common bisphosphonates include alendronate (Fosamax, Merck;

Binosto, Mission Pharmacal), risedronate (Actonel, Allergan; Atelvia, Allergan), ibandronate (Boniva, Genentech), and zoledronic (Reclast, Novartis).

The mechanism of action of these agents is to attach to hydroxyapatite binding sites in bone. When osteoclast-induced bone resorption occurs, the embedded bisphosphonate is released. The bisphosphonate then inhibits the osteoclast-induced bone resorption activity with a resultant increase in bone density.<sup>3-5</sup>

## Adverse Ocular Effects

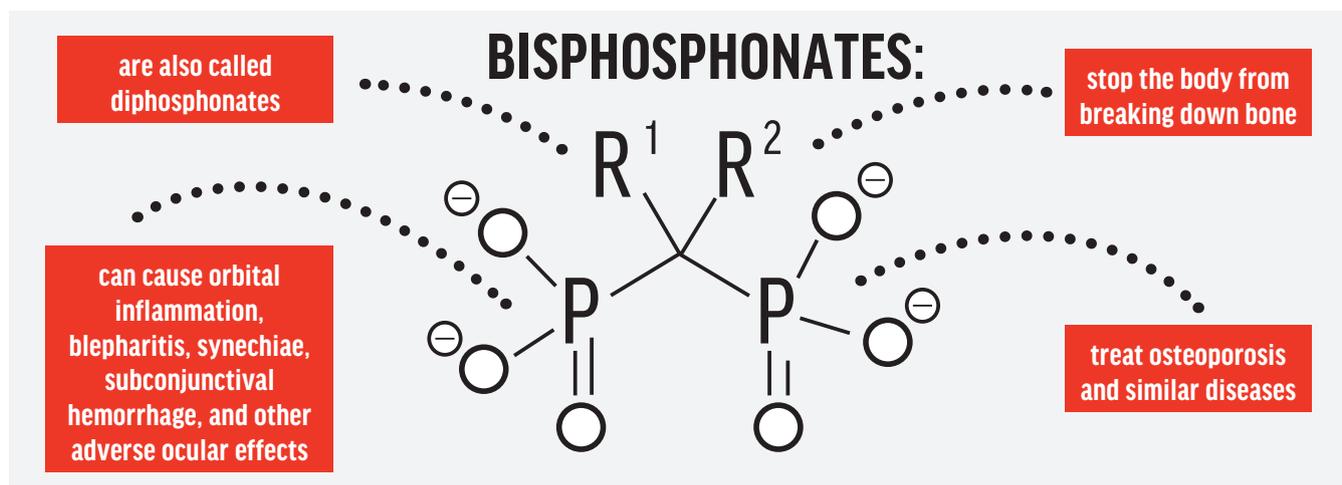
Bisphosphonate use can cause adverse ocular effects, although this is fairly rare.

Adverse effects can include orbital inflammation such as uveitis, scleritis, episcleritis, and nonspecific conjunctivitis. Less common adverse ocular effects include blepharitis, synechiae, subconjunctival hemorrhage, ocular hypertension, and ischemic optic neuropathy.<sup>6,7</sup> Signs may present unilaterally or bilaterally with mild to moderate severity, and multiple adverse ocular effects may occur concomitantly. No method has been shown to help predict which patients will be affected, further complicating care and evaluation of patients.<sup>6-8</sup>

Management of ocular findings includes treatment of the inflammatory process or processes with appropriate

## AT A GLANCE

- ▶ Bisphosphonates are the mainstay therapy in the prevention and treatment of osteoporosis.
- ▶ Bisphosphonate use can result in adverse ocular effects such as uveitis, scleritis, episcleritis, nonspecific conjunctivitis, blepharitis, synechiae, subconjunctival hemorrhage, ocular hypertension, and ischemic optic neuropathy.
- ▶ Management of ocular findings includes treatment of the inflammatory process or processes and possible discontinuation of the bisphosphonate drug.



antiinflammatory therapy with nonsteroidal antiinflammatory drugs or corticosteroids. Discontinuation of the bisphosphonate drug may also be necessary.

The route of administration affects the timing of the adverse ocular side effects, which typically occur within 48 to 72 hours after intravenous (IV) bisphosphonate administration and 2 to 3 months after oral bisphosphonate administration. Acute phase reactions, including ocular side effects, can occur after IV administration, but the findings typically resolve within 3 days of onset. Furthermore, the symptoms decrease rapidly with subsequent infusions.

Nonspecific conjunctivitis is the most common ocular side effect of bisphosphonate use and typically doesn't require treatment. If associated with IV administration, a decrease in the intensity of the conjunctivitis is expected with repeat administrations. Initiating topical ophthalmic antiinflammatories decreases the likelihood of permanent ocular sequelae. As with many inflammatory ocular conditions, the severity of the findings dictate the dosing schedule associated with the antiinflammatory drug. If resolution does not occur with antiinflammatory treatment, temporary discontinuation of the bisphosphonate will allow resolution of the ocular findings. Individuals who experience conjunctivitis, episcleritis, and uveitis are most often able to resume bisphosphonate treatment. It is of note that studies have concluded the need for discontinuation of bisphosphonate

use for scleritis and some cases of uveitis to completely resolve. In patients with severe ocular inflammation, discontinuation of bisphosphonate drugs allows resolution of adverse ocular side effects.

In some instances, it may be difficult to ascertain whether or not the patient is experiencing a drug-induced ocular side effect. The practitioner can initiate a challenge assessing for a positive rechallenge result; if cessation of the medication leads to resolution and reinitiation results in recurrence of the ocular findings, the positive rechallenge results suggest that drug-induced ocular side effects are present.

Nonspecific conjunctivitis may not require discontinuation of the bisphosphonate, whereas cessation of the drug is imperative for resolution in the presence of unilateral or bilateral scleritis.<sup>7,8</sup>

Although other systemic drug classifications possess guidelines that include ocular health assessment, bisphosphonates do not carry such a recommendation at this time, so a thorough medication history is imperative. Patient education regarding possible ocular side effects and recommendations to seek the care of an eye care provider can reduce the likelihood of patients developing permanent ocular sequelae as a result of bisphosphonate use. In particular, patients must understand the importance of immediately notifying their optometrist if any changes in vision occur.

#### KNOW WHAT TO LOOK FOR

The number of ocular adverse effects associated with systemic drug use

seems to be ever-growing. Keeping up with potential ocular effects of newly marketed drugs and constantly reevaluating those of older drugs is the responsibility of every medical practitioner, as we all seek to provide the best ratio of benefit over risk for our patients. If you know that adverse events are possible, you'll always keep an eye out for them, making you less likely to miss something. ■

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#### ALISSA M. COYNE, OD, FAAO

- Assistant Professor, Pennsylvania College of Optometry at Salus University, Elkins Park, Pennsylvania
- [acoyne@salus.edu](mailto:acoyne@salus.edu)
- Financial disclosure: None

#### TRACY OFFERDAHL, PHARMD, BPHARM, RPH

- Assistant Professor, Pennsylvania College of Optometry at Salus University, Elkins Park, Pennsylvania
- [tofferdahl@salus.edu](mailto:tofferdahl@salus.edu)
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