



News Release

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Bisphosphonates Can Wreak Havoc in the Mouth and Jaws, Oral and Maxillofacial Surgeon Warns

[Rosemont, IL] Bisphosphonates, a class of drugs taken by millions of patients for osteoporosis and bone-related complications of metastatic cancer may actually contribute to the onset of osteochemonecrosis, or “bis-phossy jaw,” a painful, potentially disfiguring jaw condition, according to an article published in the May issue of the *Journal of Oral and Maxillofacial Surgery*.

While all forms of bisphosphonates, both oral and injectable, may increase the risk of bis-phossy jaw, it is the injectable medications, that appear to pose the greatest risk, according to John W. Hellstein, DDS, MS, clinical professor in the departments of oral pathology, radiology and medicine at the University of Iowa. He notes that bisphosphonates, which are often used to treat the complications of advanced cancer known as hypercalcemia of malignancy, may disrupt the process by which specialized bone cells remove diseased bone in the jaw, resulting in serious infection and osteopetrosis, an abnormal buildup of dense yet fragile, easily breakable bone.

Bis-phossy jaw warrants the attention of oral and maxillofacial surgeons (OMSs) and other health care professionals in part because bisphosphonate therapy has become so prevalent, says Dr. Hellstein. For example, more than 300,000 patients worldwide have received the injectable bisphosphonate zoledronic acid for hypercalcemia of malignancy.

Hypercalcemia of malignancy, a potentially fatal condition marked by excessive levels of calcium in the blood, occurs when cancer cells metastasize (spread) through the blood and lymph systems, becoming lodged in bone. Bisphosphonate infusion therapy can help prevent the fractures and pain that often result from bone metastases.

Oral bisphosphonate use for osteoporosis is even more common than injectable bisphosphonate use for cancer. In 2003, the oral bisphosphonate alendronate was listed as the 19th most commonly prescribed drug, with 17 million prescriptions, and risidronate, another oral bisphosphonate, was 72nd with 6 million

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Bisphosphonates May Lead to Bis-phossy Jaw

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prescriptions. “With such large numbers, even oral bisphosphonates may yet prove to be of clinical concern for oral health care providers,” Dr. Hellstein says.

“Because bisphosphonate use is so widespread, “We may be witnessing only the tip of the iceberg in a possible bis-phossy jaw epidemic,” Dr. Hellstein warns.

Recent studies published in the *Journal of Oral and Maxillofacial Surgery* address the relationship between bisphosphonates and osteonecrosis, which often results from a decrease in blood supply to specific areas of the bone. *Osteochemonecrosis* differs from osteonecrosis in that it appears to involve a bacterial infection rather than a loss of blood flow, with bisphosphonates as a key contributing factor.

The goal of bisphosphonates is to strengthen bone and prevent fractures. However, these medications may act somewhat differently on jaw bone, particularly in patients with active gum disease and compromised immune systems, such as cancer patients who have undergone chemotherapy, Dr. Hellstein warns.

Far from being a static substance, bone is constantly remodeling. Bone cells called osteoblasts create new bone, while bone cells called osteoclasts remove old bone. Normally, these two types of cells work in harmony, a balance known as the osteoclast/osteoblast axis. Bisphosphonates inhibit bone removal (resorption) by osteoclasts, thereby supporting the buildup of new bone. While this action may help prevent fractures in the hip, spine and other skeletal regions, it may disrupt the osteoclast/osteoblast axis in the jaws, impairing osteoclasts’ ability to remove, and thus repair or contain, ‘diseased’ bone.

This impairment then causes osteoblasts to “overbuild” or “wall off” diseased bone. As osteoblasts build new bone, the failure of osteoclasts to remove contaminated bone interferes with the development of the necessary structure, or ‘scaffolding,’ on which to lay down healthy bone.

Dr. Hellstein urges the development of protocols to better predict patients at risk for bis-phossy jaw and preventive measures to decrease the incidence of the disease. “We will need much more research to see what population groups or oral factors are the best risk predictors of bis-phossy jaw,” he says. “There is no doubt that bisphosphonate therapy will continue to show substantial clinical benefits and grow in use. We need to discover the ideal dosage, delivery route, and bisphosphonate for each patient category.”

The American Association of Oral and Maxillofacial Surgeons (AAOMS), the professional organization representing more than 7,000 oral and maxillofacial surgeons in the United States, supports its members’ ability to practice their specialty through education, research, and advocacy. AAOMS members comply with rigorous continuing education requirements and submit to periodic office examinations, ensuring the public that all office procedures and personnel meet stringent national standards.

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