review of all available follow-up images was also carried out. We subjected 2 osteoprogenitor cell lines, RAW 264.7 and D1, to various stretch regimens simulating the rigorous jaw versus appendicular skeletal motions in the presence of bisphosphonates and assessed cell proliferation and differentiation. We found a significant decrease in cell proliferation of D1s (osteoblast progenitors) but, surprisingly, a robust proliferative response in the RAWs (osteoclast progenitors) in response to the drug. Similarly, we observed a decrease in osteoblast differentiation and an increase in osteoclast differentiation. Although this increase in number and differentiated osteoclasts is paradoxical to the presence of necrotic bone observed with BRONJ, we are presently exploring the molecular pathways and functionality of these neodifferentiated osteoclastic population by using in vitro assays. From our observations, we report for the first time that the rigorous stretch regimens in the presence of bisphosphonates can lead to a perturbation of the jaw bone homeostatic mechanisms which, in turn, would result in BRONJ.


Background. During the early stages of bisphosphonate-related osteonecrosis (BRON), areas of reduced uptake of technetium-99 methylene diophosphonate on scans are consistent with the decreased level of vascularity of the bone. With disease progression, scintigraphy is able to show areas of radionuclide uptake representative of osteoblastic hyperactivity. Increased uptake of technetium-99 in the scintigraphy of the jaws of patients who receive bisphosphonates should always be considered as an indicator of probable BRON.

Objective. The purpose of this retrospective study was to correlate nuclear medicine study findings with rate of inflammation and bone activity before dispensing any intravenous bisphosphonates and to identify any potential confounding or evolving changes thereafter.

Study design. This retrospective study involved a review of a patient’s previous medical record and bone scintographies which were images made for initial metastatic workup and subsequently compared with images after the commencement of any bisphosphonate regimen to establish a baseline for further readings. Review of all available follow-up images was also carried out. The amount of uptake of the radiotracer was graded as 0 (no uptake), 1 (mild), 2 (moderate), or 3 (intense).

Results. The study showed base grade and cumulative dose to have statistically significant results. A 3-way correlation to see the effect of base grade and cumulative dose on the jaw showed that it is twice as likely to see changes in mandible than maxilla. The presence of preexisting “hot-spots” in the jaws before bisphosphonate therapy makes future identification of BRON difficult. It was also seen that a series of scintigraphs of the same subject showed changes and the possibility of predicting BRON.


Over the past 3 decades, our understanding of the histopathology of ischemic bone disease has dramatically improved, but a classification system has not been well established. We present current concepts of chronic ischemic bone disease (CIBD) histopathology and propose a useful disease classification. This summary is based on review of a convenience sample of >11,000 jawbone marrow samples from a large archival oral pathology database, an extensive literature review, and collaboration with well known medical experts in osteonecrosis. Ischemic bone death is represented by focal (not scattered) loss of osteocytes and is not found in most jaw CIBD. Marrow changes include: wispy (not dense) ischemic myelofibrosis streaming between adipocytes; variation in adipocyte size; dilated marrow capillaries, typically with few remaining erythrocytes and with passive endothelial cells; few, if any, chronic inflammatory cells; occasional mast cells; oil cysts; granular cytosol in nonviable adipocytes; fatty microvesicles; intramedullary cavitation; frequent intravascular thrombi; focal hemorrhage (microinfarction); plasmastosis (serous oozes); and calcific/proteinaceous detritus. Although microscopic features are similar, a distinction between inflammation and CIBD can usually be made, and some lesions will show both diseases. A suggested CIBD classification system includes: avascular necrosis, bone marrow edema, regional ischemic osteoporosis, ischemic myelofibrosis, ischemic osteosclerosis, ischemic marrow atrophy (honeycombed bone), intramedullary fibrous scar, and ischemic cavitation. The microscopic parameters are distinct enough to allow a confident diagnosis of CIBD and distinguish it from inflammatory marrow changes. A classification system is proposed.

**NONINVASIVE DETECTION OF ANEUPLOID CELLS CAN PREDICT THE MALIGNANT POTENTIAL OF ORAL LICHEN PLANUS.** A. Hirshberg, N. Yarom, T. Shani, I. Kaplan, M. Vered, G. Rechavi, N. Amariglio, L. Trakhtenbrot. Tel Aviv U School of Dental Medicine, Tel Aviv, Rabin Medical Centre, Petah-Tiqva, Chaim Sheba Medical Center, Tel-Hashomer, Israel.

The malignant potential of oral lichen planus (OLP) has been the subject of controversy in the literature. The present study aimed to evaluate the presence of chromosomal numeric aberrations in cells collected by brush sampling from OLP patients for early detection of potentially malignant cells even before cytologic changes are apparent by traditional histopathology. Brush samples from affected and nonaffected mucosa of 57 patients with OLP and 41 control subjects were simultaneously analyzed for morphology and fluorescent in-situ hybridization (FISH) using chromosomes 2 and 8 centromeric probes. In 14 OLP patients (24.5%) >2% and in 10 (17.5%) >5% of the cells were aneuploid. ACs were also detected in the normal-looking mucosa in 7 patients. Three patients developed squamous cell carcinoma in 5 years’ follow-up; the brush sample of these patients contained a significant number of ACs. In the control group, >2% ACs were detected only in 3 subjects (7%). OLP carries an increased risk for chromosomal instability. Identifying aneuploid cells in a brush sample and the combined morphologic and FISH analysis can increase the specificity in predicting the malignant potential of OLP.