
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 radiouclide 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 scintigraphies 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.