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Ra223 effectiveness on bone metastases with predominant osteoblastic activity

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Radium 223 dichloride (Ra223) is the only targeted alpha therapy able to extend survival in patients with bone metastases from prostate cancer. Mechanism of action and data currently available focused mainly on osteoblastic metastases from prostate cancer. In our institute, a patient with breast cancer affected by osteolytic metastases was treated with off-label use of Ra223, after obtaining informed consent. The evaluation of the deposit areas of Ra223 showed a perfect overlap with the regions of osteolysis previously detected by scintigraphy, indicating a possible therapeutic effect. A total of four treatments were planned with a dose of 55 KBq/kg every 4 weeks according to Phase 2 data; the first administration of 5280 KBq of Ra223 was performed in January 2016. Four days later, the patient was assessed with a planar whole-body scintillation γ-camera imaging to evaluate biodistribution of Ra223 and to gather planar imaging of skull, thorax, and pelvis. Images showed the preferential uptake of Ra223 in gamma scintigrams overlapped the same osteolytic lesions previously identified by computed tomography and technetium-99 scans [Figure 1]. Currently the patient shows to follow up the complete remission of bone disease. This case report is the first document attesting Ra223 deposit in osteolytic metastases opening new opportunity of therapeutic development for this radiopharmaceutical.

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