

《招待講演》

Systemic Metabolic Radioisotope Therapy in the Management of Bone Pain

Aldo Serafini, M.D.

University of Miami/Sylvester Comprehensive Cancer Center
Miami, USA

Bone metastasis is a common sequela of a variety of solid malignant tumors such as prostate, breast, lung and renal cancers. This can lead to significant morbidity due to fractures, hypercalcemia, bone pain, as well as reduced performance status and quality of life. A multidisciplinary approach is recommended, not only to address the etiology of the pain, but also to treat the patient pain and complications appropriately.

Currently, the treatment of bone pain remains palliative at best with systemic therapy (analgesics, hormone, chemotherapy, steroids and bisphosphonates) as well as local treatments (such as surgery, nerve blocks and external beam radiation). However, many of these treatments are limited in their efficacy or duration and have significant side effects which seriously limit the cancer patients' quality of life. A significant socioeconomic cost is borne by the patient and his family as a result.

Various radiopharmaceuticals have demonstrated significant efficacy in relieving bone pain secondary to bone metastasis. Various radioisotopes conjugated to pyrophosphate analogues have been developed for systemic metabolic radiotherapy. Samarium-153-EDTMP is a 1 : 1 complex of radioactive Samarium-153 and a Tetraphosphonate [ethylenediamine-tetramethylene phosphonic acid (EDTMP)]. Samarium Sm-153-EDTMP has a high affinity for skeletal tissue and concentrates by chemisorption in areas of enhanced metabolic activity, where it associates with the hydroxyapatite crystal. Samarium-153 Lexidronam (Quadramet®) has been approved for routine use by the FDA. This agent offers several advantages over other agents used for palliating bone pain. Due to its half-life of 46 hours and its beta emissions, a high dose rate can be delivered to regions adjacent to enhanced osteoblastic activity over a short period of time with little residual long term activity being left in the bone marrow.

This has been associated in many patients with improved mobility, reduced dependence on narcotic and non-narcotic analgesics, improved performance status and quality of life and in some studies, with improved survival. Additional applications are under investigation, and similarly appear promising and will extend its use into new areas.

Key words: cancer, bone metastasis, treatment, pain, radiopharmaceuticals