Toxicity of Therapy with Sm-153-EDTMP: To What Extend can it be Related to the Tumor Type?

Dear Editor,

We have read the interesting case report of Keskin *et al*.[1] The authors suggest that a worsening of hemorrhagic pericardial effusion at the second day with fatal outcome 20 days later could be related to therapy with 37 MBq per 1 kg of body weight of samarium-153-ethylene diamine tetramethylene phosphonate (Sm-153-EDTMP) due to bone-metastasizing hepatocellular carcinoma.

Actually, a place of intensive bone remodeling caused by the tumor cells, not the tumor itself, is the address of the therapy. Hence the absorbed dose of radiation is roughly proportional to the accumulation of a bone-seeker [as technetium-99m methyl diphosphonate (Tc-99m-MDP)] on bone scan.[2,3] It implies that a metastatic site that is very intensive in comparison to the surrounding (uninvolved) bone receives a very high dose, whereas the (marrow-bearing) normal bone is relatively spared [Figures 1 and 2]. Although the literature data seem scarce, the effect of such a therapy could sometimes even extend beyond merely palliation;[4,5] in our own experience, there are some patients in whom a (transient) decrease of tumor marker level could be observed after therapy with Sm-153-EDTMP. In an opposite situation, where the uptake of a bone-seeker in metastatic sites is only slightly higher than in the normal bone, minimal or no therapeutic effect can be expected. This could be accompanied by significant marrow toxicity, which usually manifests after a time of between several days and a few weeks.

From the Figure presented in the cited publication,[1] we infer that the patient had only a few bone metastatic foci, with only slightly enhanced accumulation of the radiotracer. Hence it can be expected that the ratio of the beneficial versus toxic effects of the therapy could be disadvantageous for the patient. The time of onset of the complications allows for the presumption, however, that their relation to the injection of Sm-153-EDTMP might be only loose, if there is any.

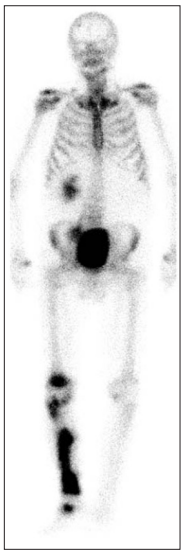

Figure 1: Osteoblastic metastatic foci in the right tibia and pelvis (smaller, masked by the enlarged bladder); after the bladder catheterization, therapy with Sm-153-EDTMP was performed

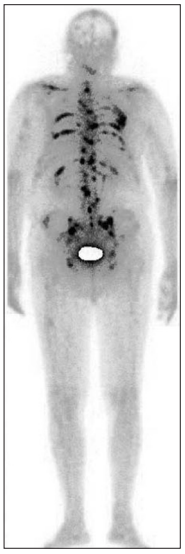

Figure 2: Multiple osteoblastic metastases visible 50 min after injection of Sm-153-EDTMP

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Conflicts of interest
The authors declare no conflicts of interest.

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