



IMAGE OF THE MONTH

^{213}Bi -PSMA-617 targeted alpha-radionuclide therapy in metastatic castration-resistant prostate cancer

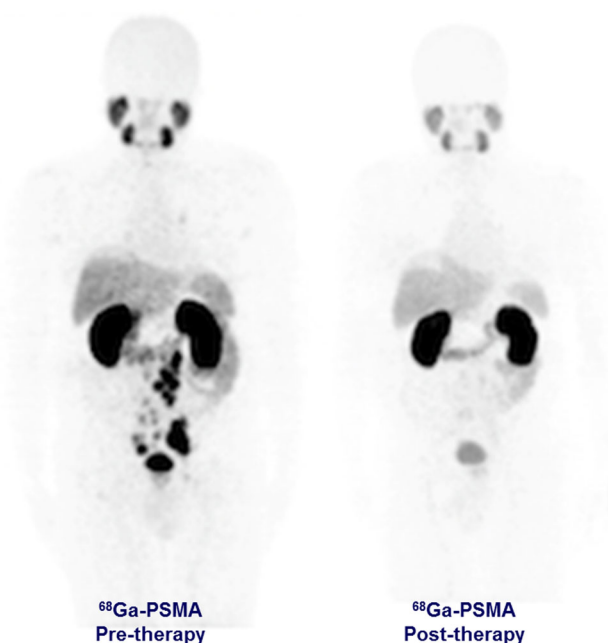
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Prostate-specific membrane antigen radioligand therapy (PSMA-RLT) with ^{177}Lu -PSMA holds great promise as a safe treatment option in patients with metastasized castration-resistant prostate cancer (mCRPC) with appropriate selection [1]. This approach, together with ^{68}Ga -PSMA PET/CT, is an excellent example of theranostic nuclear medicine [2]. However, more structured data have recently shown that despite a marked response to PSMA-RLT, some patients are refractory to ^{177}Lu -radioligand therapy [2, 3]. Fortunately recent studies have demonstrated that targeted α -radiation therapy with ^{225}Ac -PSMA can significantly benefit mCRPC patients [4]. Similarly, ^{213}Bi -DOTATOC may be able to break the radioresistance to β -emitters while simultaneously reducing haematological toxicity in patients with diffuse red marrow infiltration by neuroendocrine tumour [5].

We present the first-in-human treatment concept with ^{213}Bi -PSMA-617 in a patient with mCRPC that was progressive under conventional therapy. The patient was treated with two cycles of ^{213}Bi -PSMA-617 with a cumulative activity of 592 MBq. Restaging with ^{68}Ga -PSMA PET/CT after 11 months showed a remarkable molecular imaging response. This patient also



demonstrated a biochemical response (decrease in PSA level from 237 $\mu\text{g/L}$ to 43 $\mu\text{g/L}$).

This case supports the need further exploration on the use and supply of targeted α -radiation therapy.

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