



First patient exceeding 5-year complete remission after ^{225}Ac -PSMA-TAT

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Image of the month

Prostate-specific membrane antigen (PSMA)-targeted alpha-therapy (TAT) with ^{225}Ac -PSMA-617 has demonstrated promising anti-tumor activity in advanced-stage, metastatic castration-resistant prostate cancer [1].

This image presents one of our first patients, suffering from progressing bone and lymph-node metastases after short (< 1 year) response to the GnRH-analog leuporelin acetate, the antiandrogen bicalutamide, and denosumab. Due to the coronary 3-vessel disease with dilative cardiomyopathy, novel androgen axis drugs and taxanes were considered contraindicated (reduced cardiac output, ejection fraction < 35% after aortic-valve surgery, infarction treated with percutaneous coronary intervention/stents, catheter ablation of pro-arrhythmic scare, and implantation of cardioverter-defibrillator and pacemaker). In July/September/November 2014, he received 3 cycles of mean 8.4-MBq ^{225}Ac -PSMA-617 at PSA levels of 39.7, 7.7, and 0.32 ng/ml, respectively. Since January 2015, the PSA is below the detection limit and PSMA-PET

demonstrated no pathological findings. Baseline and representative follow-up exams are presented as maximum-intensity projections (a). The baseline PSMA-PET/CT (b) and the 5-year follow-up (c) are illustrated by representative cross-sectional slices highlighting the primary tumor, bone, and lymph-node metastases. The patient developed chronic xerostomia, and with some delay, creatinine increased from 1.3 in October 2015 to 3.3 mg/dl in January 2019. This could partially be related to the renal radiation exposure of PSMA therapy, probably in combination with cardiorenal syndrome, diabetes, and arterial hypertension [2].

This interesting image illustrates that individual chemo-naïve patients can achieve long-lasting complete remission following ^{225}Ac -PSMA-617 TAT. Well in line with the patient presented in this image presenting long-term remission, exceptional high response rates to ^{225}Ac -PSMA-617 therapy were recently reported for a larger cohort of early-stage patients [3]. However, adverse late effects must be kept in mind when applying radioligand therapy to patients with earlier-stage disease.

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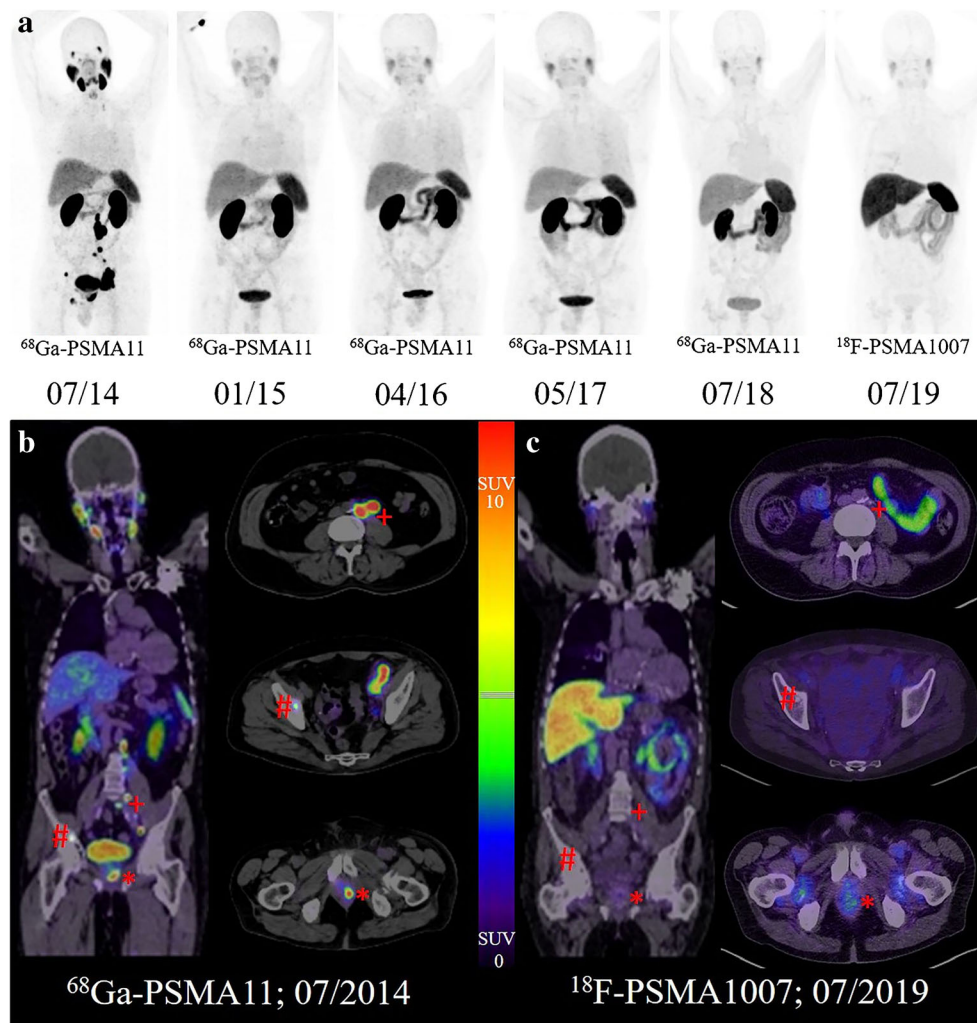
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Compliance with ethical standards

Conflict of interest CK and UH are patent holder of PSMA-617. AM, FB, FLG, CA, CK, and UH are holders of patent application on treatment of PSMA expressing cancers with ^{225}Ac . The other authors declare no conflict of interests.

Ethical approval All procedures performed in this retrospective evaluation involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards

Informed consent Informed consent and consent for publication were obtained from the individual participant included in the study. This is a case report from clinical practice; no trial registration is needed for this kind of publication.

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