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Introduction

Only about 60% of patients with a biochemical failure after radical prostatectomy respond to prostatic bed irradiation¹. In this setting, ⁶⁸Ga-PSMA PET/CT seems to be a useful tool for the detection of lesions remaining occult to conventional imaging work-up², changing the treatment strategy in a significant percentage of patients³.

Case Description

A sixty-four year old man with a PSA of 6 µg/L underwent in 2011 a radical prostatectomy for a Gleason 6, pT2cNxR0 prostate adenocarcinoma. PSA became undetectable until January 2014. In December 2014, with a PSA level of 0,17 µg/L and a negative MRI of the pelvis and the prostatic bed, the patient was referred for classical external beam radiotherapy (EBRT). In 33 sessions, 66Gy were delivered to the prostatic bed. However, PSA levels continued to rise after radiotherapy (RT) with values of 0,21 µg/L and 0,28µg/L at one and four months, respectively. The patient remained totally asymptomatic. The multidisciplinary urological tumor board proposed a ⁶⁸Ga-PSMA PET/CT. This revealed a single positive pre-sacral lymph node which was confirmed on pelvic MRI. As this lesion was located outside the previous radiation field, a stereotactic body salvage RT (SBRT : 30 Gy/3 fractions) was performed using a tri-modality fusion of PET/CT, MRI and CT for RT Planning. One month later, the patient was strictly asymptomatic and PSA had went down to 0,19 µg/L. PSA further decreased to 0,09 µg/L and 0,06 µg/L at 5 and 8 months post-RT, respectively. Finally, PSA became undetectable one year after salvage RT.

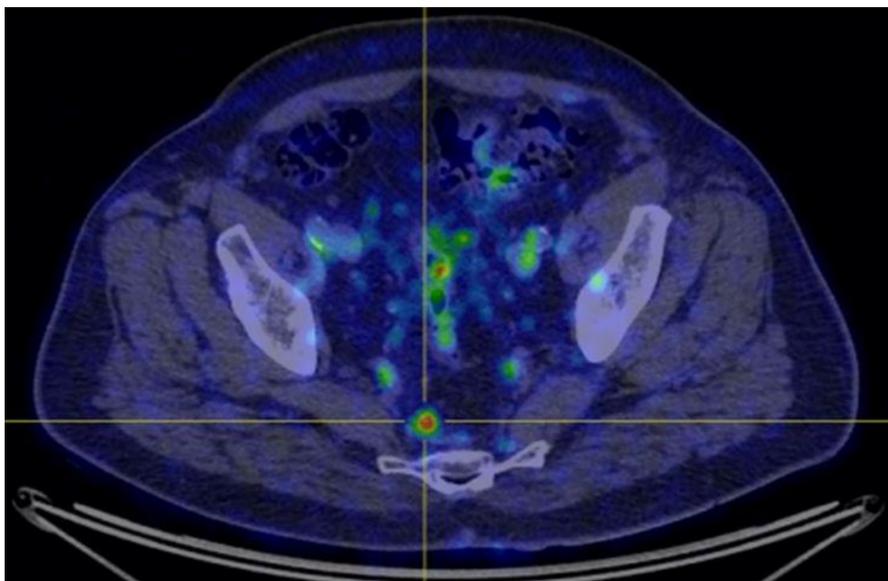


Fig 1 : ⁶⁸Ga-PSMA PET/CT Axial

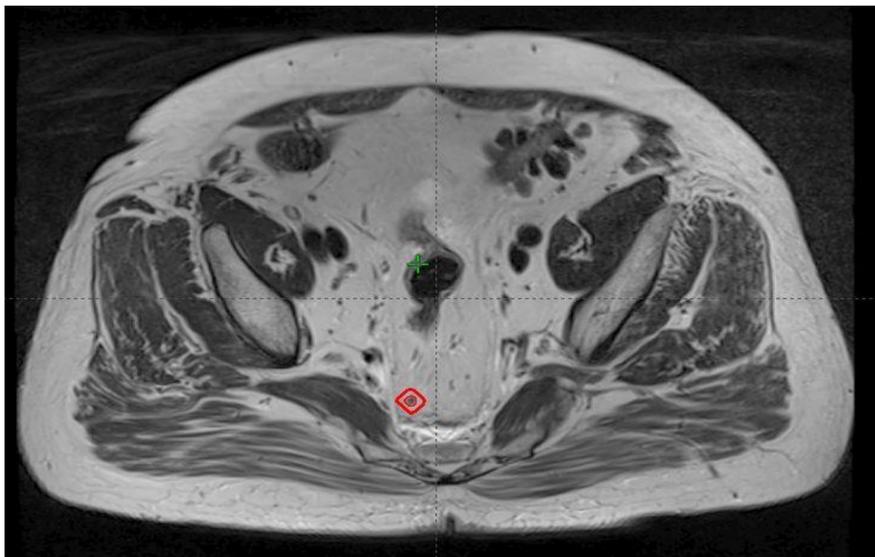


Fig 2 : T2 MRI Axial

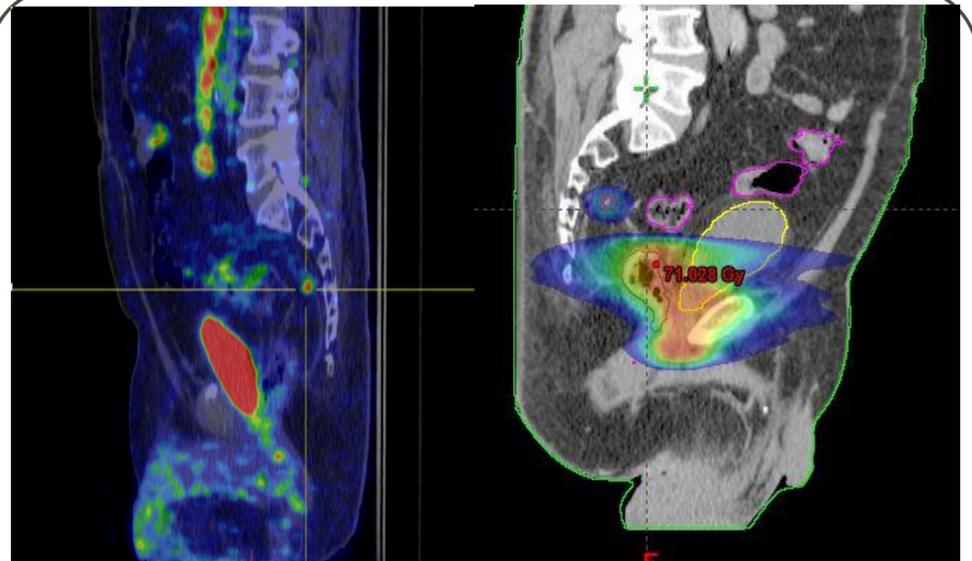


Fig 3 : ⁶⁸Ga-PSMA PET/CT Sagittal

Fig 4 : Plan summation of EBRT and SBRT treatment

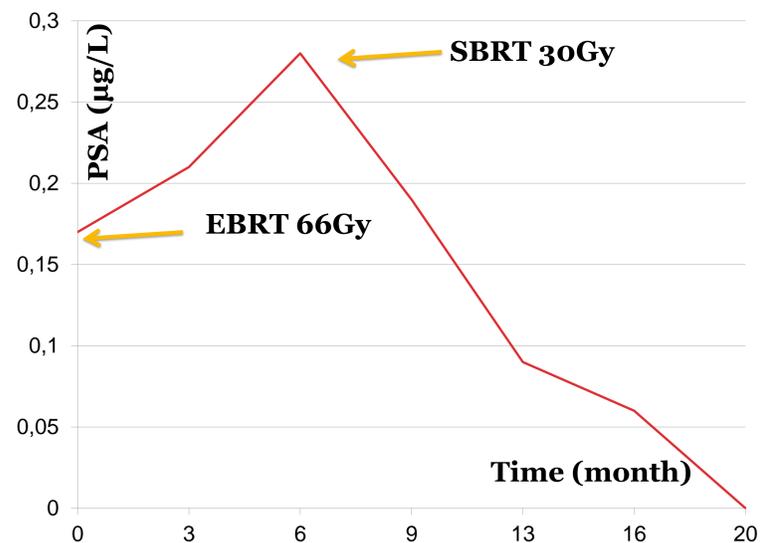


Fig 5 : PSA Evolution

Discussion and Conclusion

About 30% of patients will present a biochemical relapse after radical prostatectomy for adenocarcinoma of the prostate⁴. Unfortunately, conventional imaging work-up (Thoraco-abdominal CT-Scan, Bone Scan and/or pelvic MRI) is usually negative due to its low sensitivity at low PSA values. Prostatic bed irradiation is considered the standard treatment for those patients. However, about 40% of these recurrences will not be cured by this local radiation. The possibility of a relapse elsewhere, i.e. outside the conventional radiation field, has to be taken into consideration. In this context, ⁶⁸Ga-PSMA PET/CT has shown to be a useful tool in the detection of small bone or lymph node lesions even at very low PSA levels⁵. This might be of particular interest as we increase the possibilities of detecting 3 or less extra-prostatic lesions (oligo-metastatic disease) where local treatment with SBRT can be delivered, delaying invalidating systemic hormonal treatment up to 38 months⁶. As such, SBRT allows for a less toxic, yet noninvasive approach, with a progression-free survival of about 21 months⁷.

In summary, ⁶⁸Ga-PSMA PET/CT might be an interesting tool for early detection and RT guidance of small recurrences after radical prostatectomy for prostate cancer, delaying the use of systemic therapy.

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