

Long-term Durable Response after Treatment with ^{177}Lu -PSMA Therapy in Combination with Enzalutamide

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Abstract

A 75 years-old male with metastatic castration-resistant prostate cancer (mCRPC) who had progressed under enzalutamide was treated with 4 cycles of ^{177}Lu lutetium-prostate specific membrane antigen (PSMA), as the third line of treatment for mCRPC, without discontinuing enzalutamide. The patient showed near complete response and maintained on enzalutamide for four years after PSMA-targeted radioligand therapy (PRLT) without a need for further rechallenge PRLT. Also, the patient had a long term diabetes mellitus but no nephrotoxicity regarding PRLT was observed. Long-term durable responses after PRLT without recurrence is rare and biomarkers for such phenomenon warrants further studies.

Keywords: PRLT; mCRPC; PSMA; ^{177}Lu -PSMA; Exceptional response.

Case Report

A 75 years-old metastatic castration-resistant prostate cancer (mCRPC), Gleason score = 4 + 4, initial pTNM = T3bN1M0, was referred to our center for PSMA-targeted radioligand therapy (PRLT). The patient previously received docetaxel, followed by enzalutamide and showed evidence of both biochemical and radiographic progression on these agents. His ^{68}Ga -PSMA-11 PET/CT before PRLT showed multiple bone and lymph nodes metastasis with intense PSMA avidity while the PSA levels were 7.62 ng/ml at the time of imaging. This finding was not surprising since PSA and PSMA uptake have moderate to strong association [1]. In 2018, the patient received 4 cycles of ^{177}Lu -PSMA every 8 weeks with cumulative activity of 24.7 GBq and the PSA levels declined to 0.08 ng/ml with significant resolution of the disease burden **Figure (a, b)**. The patient had debilitating bone pain prior to PRLT but after the first cycle of therapy the pain subsided dramatically. Transient grade I anemia, lymphopenia and nephrotoxicity occurred during the course of PRLT. However, no severe adverse events were observed which is consistent with previous safety studies in this regard [2,3]. After finishing the 4 cycles

of PRLT a near complete response was noted and the patient maintained on enzalutamide, considering the possible usefulness of this combination. Moreover, the patient had a history of long term diabetes mellitus and in a four years' follow-up no long term nephrotoxicity and hematotoxicity was noted. The PSA levels remained below 0.1 ng/ml and the patient is still alive with good quality of life and no skeletal pain. The patient showed near complete response and maintained on enzalutamide for 54 months after PRLT without a need for further rechallenge PRLT. In 2019 and 2021 two surveillance ^{68}Ga -PSMA PET/CTs were performed, revealing only a small focus of PSMA-avid metastasis in the posterior element of the 3rd lumbar vertebra (SUV_{max} = 6.3) in the last follow up **Figure (c)**. Previous cases with exceptional responses usually have had a relapsing course and repeated cycles of PRLT were warranted which is in contrast to our case [4]. This case illustrates an exceptional responder to PRLT with durable response. To our knowledge, the biologically-derived markers for such phenomenon has not yet defined.

Citation: Bestetti AM. Large Colonic Lipoma: An Unusual Presentation and Colonoscopic Resection. *J Clin Med Img Case Rep.* 2022; 2(6): 1299.

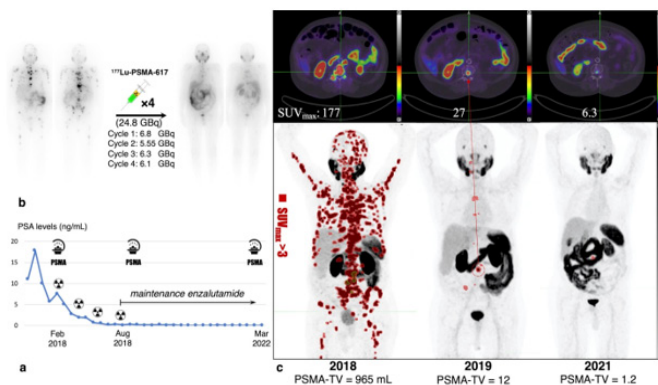


Figure (a,b): In 2018, the patient received 4 cycles of ^{177}Lu -PSMA every 8 weeks with cumulative activity of 24.7 GBq and the PSA levels declined to 0.08 ng/ml with significant resolution of the disease burden.

c) In 2019 and 2021 two surveillance ^{68}Ga -PSMA PET/CTs were performed, revealing only a small focus of PSMA-avid metastasis in the posterior element of the 3rd lumbar vertebra (SUVmax= 6.3) in the last follow up.

Conflict of interest:

The authors had nothing to disclose.

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