Centre hospitalier Universitaire vaudois

THERANOSTIC APPROACH WITH PSMA LIGANDS IN PROGRESSIVE METASTATIC CASTRATION-RESISTANT PROSTATE CANCER (mCRPC): FOCUS ON CHUV EXPERIENCE

ISPSO INSTITUT DES SCIENCES PHARMACEUTIQUES DE SUISSE OCCIDENTALE

Poster : F-23

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Introduction

New radiopharmaceuticals targeting the PSMA receptor, a surface antigen highly expressed by tumor cells in prostate cancer (PC), have been studied for a **theranostic approach**. This technique consists in associating to a **same vector** a **diagnostic** or a **therapeutic** isotope (Fig1).

As part of the management of the mCRPC, the PET imaging with **^{68}Ga-PSMA** allows significant detection of tumor and metastatic sites. The **^{177}Lu-PSMA**, used secondarily to PET+ imaging, has a therapeutic action by delivering a β- irradiation to cells expressing the PSMA and to the immediate microenvironment.

Objective

The objective of this work is to offer a feedback upon the deployment of the theranostic approach in our unit after 5 years of use of PSMA tracers.

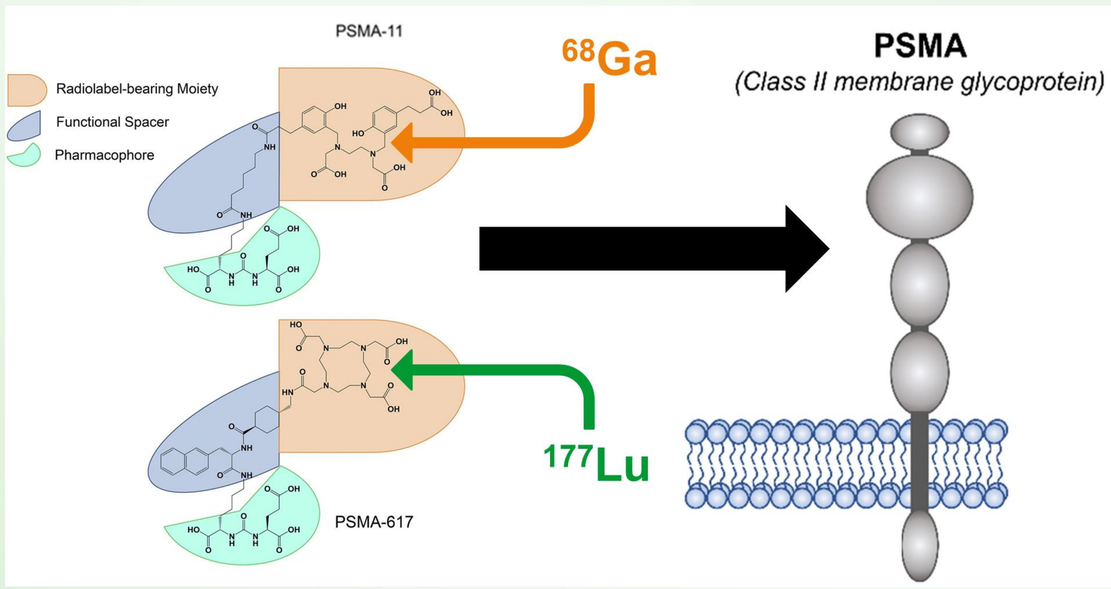
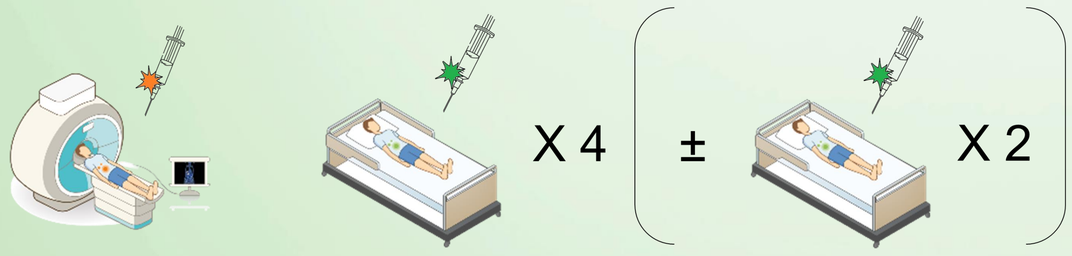


Figure 1 : Theranostic with PSMA tracers and PSMA target

Methods

^{68}Ga-PSMA is indicated in the **initial PC extension assessment**, **biochemical recurrence** and the **pre-therapeutic assessment before vectorized internal radiotherapy (VIR)**. It has been used at the CHUV since 2017 and its production has been internalized by the Radiopharmacy unit (RPH) since 2019.

VIR with ^{177}Lu-PSMA is indicated for **PSMA+ mCRPC, after failure of anti-androgens and taxanes treatments**. Two radiopharmaceuticals have been used, one ready to use since 2020 and the other one synthesized by RPH since 2021.



1- PET-scan ^{68}Ga-PSMA-11
Dose 2MBq/kg

2 - Treatment ^{177}Lu-PSMA : 4 cycles spaced by 6 weeks apart
Dose 7,4GBq – 3,7GBq (depending on general status)
+2 additional cycles according to reassessment

Figure 2 : treatment regimen for ^{177}Lu-PSMA

Conclusion

The ^{68}Ga-PSMA/^{177}Lu-PSMA couple highlights the interest and efficiency of theranostics in mCRPC.

The internalization of the production by the RPH has allowed an **increase in the number of patients treated** thanks to more **flexibility** in the management and a significant **reduction in costs**.

Results

Since 2017, 723 patients received a ^{68}Ga-PSMA dose for PET diagnosis, including 520 doses produced by RPH.

Since 2020, 293 doses of IVR ^{177}Lu-PSMA have been administered, including 109 were prepared by RPH (as of 5.30.2022).

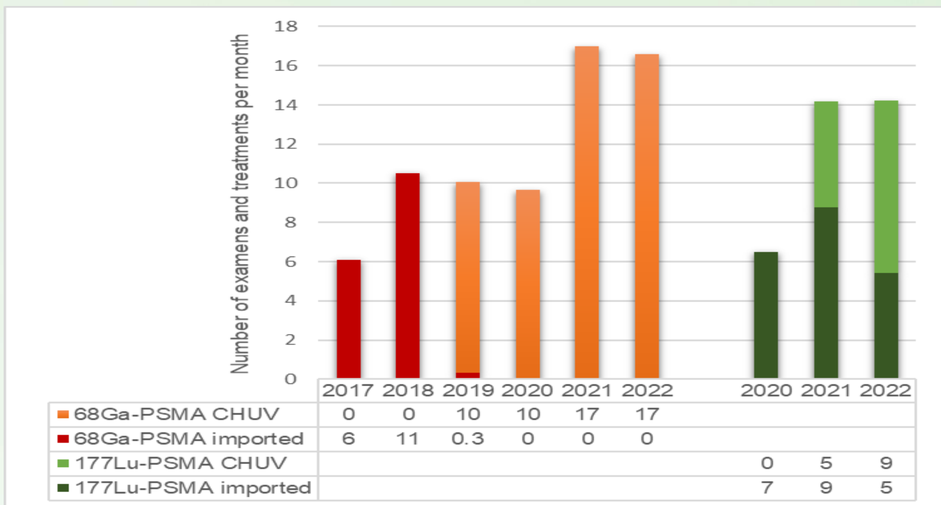


Figure 3 : number of ^{68}Ga-PSMA and ^{177}Lu-PSMA doses per month

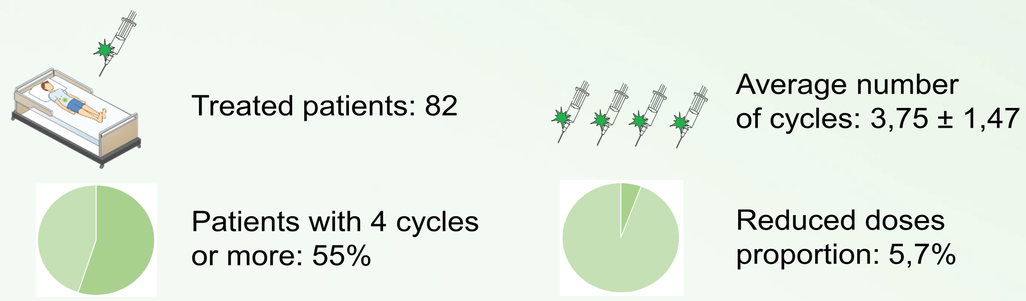


Figure 4 : Focus on ^{177}Lu-PSMA treatments on date of 3.25.2022

The results obtained with ^{177}Lu-PSMA are consistent with those of large-scale clinical studies which record very favorable progression-free and overall survival scores (8,7 vs. 3,4 months and 15,3 vs. 11,3 months respectively)[1].

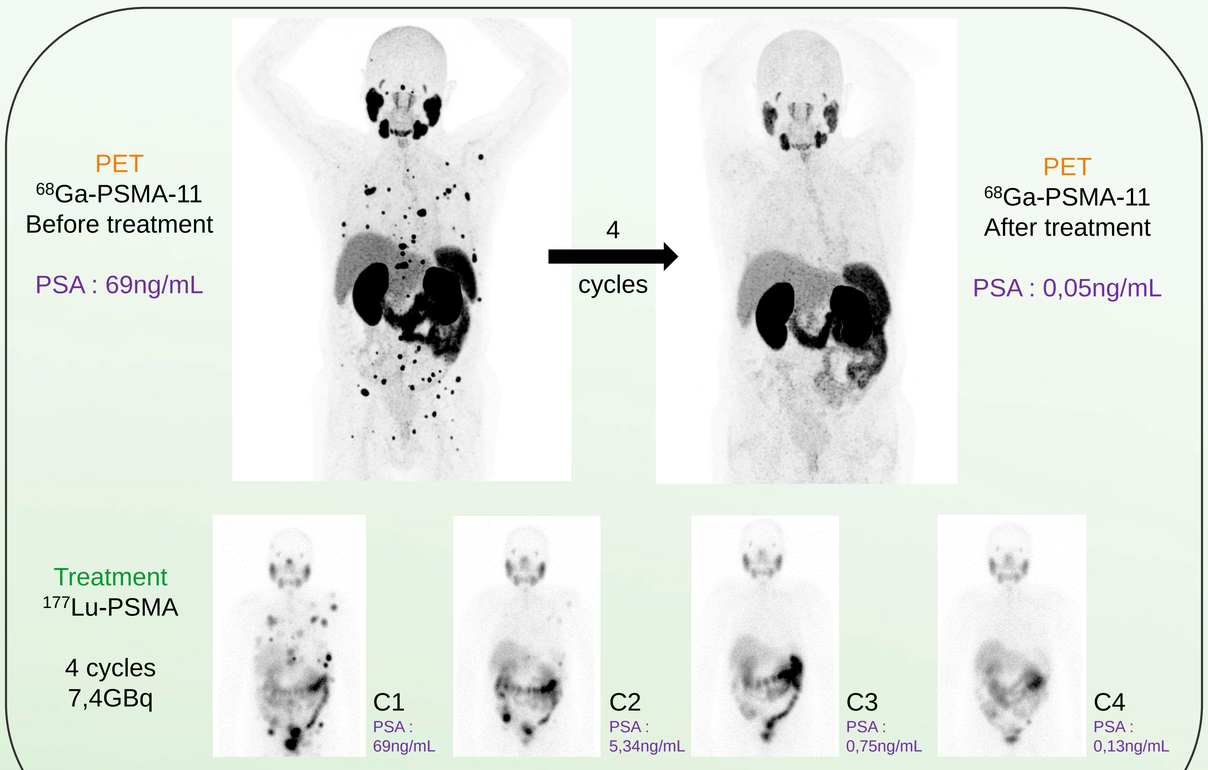


Figure 5 : Evolution of PSMA+ lesion of a patient treated at CHUV

Références

1. O.Sartor et al. N Engl J Med sept. 2021

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