Euro Cancer 2019 & Data Mining 2019 & Arthroplasty 2019: Clinical management of PSMA-diagnostics in prostate carcinoma-importance of hybrid imaging using 68Ga-PSMA-PET/CT- Manuela Andrea Hoffmann, Bundeswehr Medical Service Headquarters, Germany

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Prostate cancer is that the development of cancer within the prostate, a gland within the male genital system. Most prostate cancers are slow growing; however, some grow relatively quickly. The cancer cells may spread from the prostate to other areas of the body, particularly the bones and lymph nodes. It's going to initially cause no symptoms. In later stages, it can cause difficulty urinating, blood within the urine, or pain within the pelvis, back, or when urinating. A disease referred to as benign prostatic hyperplasia may produce similar symptoms. Other late symptoms may include feeling tired thanks to low levels of red blood cells. Factors that increase the danger of prostatic adenocarcinoma include older age, a case history of the disease, and race. About 99% of cases occur in males over the age of fifty. Having a first-degree relative with the disease increases the danger two- to three-fold. Other factors which will be involved include a diet high in processed meat, red meat, or milk products or low in certain vegetables.

Background: Prostatic adenocarcinoma (PCa) is that the second commonest cancer in men worldwide. Several retrospective studies indicate that 68Ga-PSMA-PET/CT shows a superior detection capability compared with standard-of-care imaging, for detection of recurrent PCa and metastases. We evaluated the efficiency of this method to detect primary PCa with clinically relevant aggressive potential for guiding biopsy also as surgery or radiotherapy.

Methods: Twenty-five patients with suspected PCa, supported an increased PSA level, were included in our study. Full-body scans were conducted hour after 68Ga-PSMA-11 injection. The radioligands uptake was quantified as maximum standardized uptake value (SUVmax). A prostate biopsy was performed altogether patients. The results of PET/CT scans were compared with the histopathological results of the biopsy (defined as Gleason Score, GS).

Results: In 21 of 25 patients (84%), 68Ga-PSMA-11 PET/CT detected prostatic lesions suspected of being malignant (using a cut off-level of SUVmax>2.5). PCa with a GS6 (low-grade and high-grade carcinoma) was confirmed by biopsy altogether 21 cases. All high-grade PCa lesions (defined by G7b as high-grade and 7a as low-grade cancer) showed a SUVmax>12.0, which continued to extend with rising GS. The optimal cut off-level to differentiate GS7a versus GS7b decided by ROC analysis. A SUVmax of 5.4 was the optimal cut off-value (AUC=0.9692; 95% CI 0.9086; 1.000000; SD (AUC)=0.0309). Choosing this value, 68Ga-PSMA-11 PET/CT was ready to distinguish between low- and high-grade PCa with a sensitivity of 84%, a specificity of 100%, a negative predictive value (NPV) of 67%, and an efficiency of 88% (p<0.001).

Conclusion: 68Ga-PSMA-11 PET/CT is a valuable imaging modality for the detection of primary PCa with a high efficiency for identifying clinically relevant aggressive cancer lesions and could help guiding biopsy and influence treatment decisions e.g. surgery or radiotherapy. Agus Trianto, Ocky Karna Radjasa, Rudhi Pribadi, Sekar Widyaningsih, Khoeruddin Wittriansyah, Isei Yusidharta, Wiratno, and Ita Riniatsih (2017) Exploration of Marine Sponges-Associated Fungi Producing Antifungal Compounds. Asian Journal of Microbiology Biotechnology & Environmental Science 19(3):588-593.