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Letter to the Editor

Unenhanced whole-body MRI versus PET-CT for the detection of prostate cancer metastases after primary treatment

Dear Editor,

We read with great pleasure the paper of Barchetti et al[1], published on Eur Rev Med Pharmacol Sci and titled ''Unenhanced whole-body MRI versus PET-CT for the detection of prostate cancer metastases after primary treatment" because we have few data about this topic in the current scientific literature.

Prostate cancer is the most common cancer for men in Europe and it is in the first place for incidence in Italy[2]. In almost all cases, it occurs in men over 70 years old with a 5 years overall survival of approximately 88%[3]. These data require a follow-up imaging studies less invasive. Moreover, frequently, the urological comorbidity of this class of patient contraindicate the performance of iodinated. The aggressiveness of this disease varies considerably among the same histology and unfortunately, in most cases, despite an excellent initial treatment, the tumour will progress, and we can have a local relapse or a systemic failure with the detection of metastases[4,5].

In the last decades, technological innovations in the diagnosis of prostate cancer (PCa) have allowed magnetic resonance imaging (MRI) to become the current main imaging modality for the detection, localization, staging, grading and response assessment to the therapy.

The use of multiparametric MRI (mp-MRI), that uses the combination of anatomic T2-weighted (T2W) imaging and functional techniques, for prostate cancer has increased over recent years, mainly for detection, staging, and active surveillance. The detection of PCa on T2W can be confounded by false-positive findings such as prostatitis, post-biopsy hemorrhage, benign prostatic hyperplasia, fibrosis, radiation and hormonal tissue changes but the combination of anatomic, biological and metabolic information offered by mp-MRI, provides a promising imaging tool for improving many aspects of PCa management.

The clinical suspicion of local recurrence of prostate cancer after radical treatment is based on the onset of biochemical failure. Biochemical failure after radical prostatectomy (RP) is defined as a prostate-specific antigen (PSA) level of 0.2 ng/mL or greater followed by another increased value and often precedes clinically detectable recurrence by years[4]. In these patients, it is important to determine whether there is localized recurrent disease, metastases to lymph node (LN) or bone, or a combination of localized recurrent and metastatic disease. This determination affects subsequent management, such as consideration of salvage therapy for localized recurrence, systemic treatment for metastatic disease, or a combination of these[6,7]. To date we use CT, bone scintigraphy, and transrectal ultrasound-guided biopsy to localize recurrent or metastatic disease although these examinations lack adequate sensitivity and accuracy. In recent years, PET/CT using 11C- or 18F-choline has emerged as a promising molecular imaging tool. Many researchers demonstrated the advantage of 11C-choline PET/CT to restage PCa after RP, especially for detecting distant metastases most commonly to LNs and bones[8]. Radiologists should be able to recognize the normal posttreatment MRI findings in fact often we can find fibrosis and atrophic remnant seminal vesicles after radical prostatectomy; this finding should not be confused with local recurrence. Knowledge of these known pitfalls and their interpretation in the anatomical-radiological context can help radiologists to avoid misdiagnosis and consequently mistreatment. To allow a standardized interpretation and to objectively visualize the contribution of mp-MRI to predict the presence of significant cancer, a scoring system, similar to that employed successfully by breast radiologists (BI-RADS), has been designed for mp-MRI (PI-RADS)[9].

In a study by Kitajima et al[10] was demonstrated that mp-MRI is superior for the detection of local recurrence, PET/CT is superior for pelvic LN metastasis, and both were equally excellent for pelvic bone metastasis. However, both 18F-choline and mp-MRI are complementary for restaging prostatectomy patients with suspected recurrent disease.

Corresponding Author: Carla Cavaliere, MD; e-mail: carla.cavaliere@hotmail.it

The aim of the paper of Barchetti et al[1] was to compare ^{18}Fcholine-PET/CT with unenhanced whole-body MRI for detection of lymph node involvement and bone metastases in patients with biochemically recurrent PCa after RP or EBRT to identify an optimal imaging method to restage them. There are a few numbers of reports that directly compare the diagnostic capability of ^{18}F-choline PET/CT and whole-body MRI for the detection of both local recurrences in the prostatic fossa and metastasis to pelvic LN and bone after RP. This paper reported the cases of 152 male patients with biochemical recurrence after RP or external beam radiation therapy (EBRT) underwent MRI whole-body at a 1.5 Tesla magnet and used ^{18}Fcholine-PET/CT exam as the reference standard. The MRI protocol showed a sensitivity (Se) of 99%, a specificity (Spe) of 98%, a positive predictive value (PPV) of 98%, a negative predictive value (NPV) of 96%, an accuracy of 98%.

The conclusions are for mp-RMI that thanks to its lack of ionizing radiation, excellent soft tissue contrast, high spatial resolution, no need of contrast agent, high Se and Spe, could play a role in the restaging procedure of these patients.

We need further validation with a longer follow-up time associated with a bigger study population.

A big problem is to have a homogeneous radiological training to standardize all evaluation parameters keeping in mind that the greatest difficulty is the difference between equipment available in the various Institution and often the absence of a multidisciplinary assessment to guide the radiologist tower the correct interpretation of imaging results.

Conflict of Interest

The Authors declare that they have no conflict of interests.

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C. D'Aniello[1], C. Cavaliere[2], F. Fiorica[3], G. Facchini[4]

[1]Division of Medical Oncology, A.O.R.N. dei Colli – "Ospedali Monaldi-Cotugno-CTO", Naples, Italy
[2]Department of Onco-Ematology Medical Oncology, S.G. Moscati Hospital of Taranto, Taranto, Italy
[3]Division of Radiotherapy, Arcispedale Sant'Anna, Ferrara, Italy
[4]Division of Medical Oncology, Department of Uro-Gynaecological Oncology "Istituto Nazionale Tumori", Naples, Italy