Commentary on “Impact of (18) F-fluorodeoxyglucose (FDG)-positron-emission tomography/computed tomography (PET/CT) on management of patients with carcinoma invading bladder muscle.” Mertens LS, Fioole-Bruining A, Vegt E, Vogel WV, van Rhijn BW, Horenblas S, Department of Urology, The Netherlands Cancer Institute, Antoni van Leeuwenhoek Hospital, Amsterdam Hospital, Amsterdam, The Netherlands.


Abstract

Objective: To evaluate the clinical impact of (18) F-fluorodeoxyglucose (FDG)-positron-emission tomography/computed tomography (PET/CT) scanning, compared with conventional staging with contrast-enhanced CT imaging (CECT).

Patients and methods: The FDG-PET/CT results of 96 consecutive patients with bladder cancer were analysed. Patients included in this study underwent standard CECT imaging of the chest and abdomen/pelvis <4 weeks before FDG-PET/CT. Based on the original imaging reports and recorded tumour stage before and after FDG-PET/CT imaging, the preferred treatment strategies before FDG-PET/CT and after FDG-PET/CT were determined for each patient using an institutional multidisciplinary guideline. One of the following treatment strategies was chosen: (i) local curative treatment; (ii) neoadjuvant/induction chemotherapy; or (iii) palliation. The changes in management decisions before and after FDG-PET/CT were assessed.

Results: The median (range) interval between CECT and FDG-PET/CT was 0 (0–29) days. In 21.9% of the patients, stage on FDG-PET/CT and CECT were different. Upstaging by FDG-PET/CT was more frequent than downstaging (19.8 vs 2.1%). Clinical management changed for 13.5% of patients as a result of FDG-PET/CT upstaging. In eight patients, FDG-PET/CT detected second primary tumours. This led to changes of bladder cancer treatment in another four of 96 patients (4.2%). All the management changes were validated by tissue confirmation of the additional lesions.

Conclusions: FDG-PET/CT provides important additional staging information, which influences the treatment of carcinoma invading bladder muscle in almost 20% of cases. Patient selection for neoadjuvant/induction chemotherapy was improved and futile attempts at curative treatment in patients found to have metastases were avoided.

Commentary

Accurate tumor staging is the cornerstone upon which the optimal and appropriate management of neoplastic disease is based. Although rarely acknowledged as such, the current state of the staging/imaging science is vulgar at best. Yes, we have made tremendous advances in our ability to define local disease extent and identify sites of distant spread. Even so, in the context of the ideal, we have far to go. Consider the fact that to reach the reproducibly detectable size of 1 cm³, a tumor must undergo between 28 and 32 doublings. This represents a number of between 10⁸ and 10⁹ cells! Although it is valid to ask what represents a clinically significant number of cancer cells, few would argue that it is substantially less than 10⁹. Although the article by Mertens et al. provides evidence that, relative to conventional computed tomography (CT), the use of ¹⁸F-fluorodeoxyglucose–positron-emission tomography/CT in muscle-invasive bladder cancer moves us closer to the goal of detecting ever-lower disease volumes (i.e., fewer tumor cells). The demonstrated clinical relevance of the positron-emission tomography/CT altered staging in directing therapy is illustrative of the central role of staging in disease management. This represents a welcome improvement in the sensitivity and specificity of our available staging tools. However, in the words of Robert Frost there are “miles to go before I (we) sleep.”

http://dx.doi.org/10.1016/j.urolonc.2014.03.017

William A. See, M.D.