COMMENTARY

Incidental fleurodeoxyglucose uptake in the prostate

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ABSTRACT. This commentary confirms the rarity of prostatic cancer associated with incidental prostatic fleurodeoxyglucose (FDG) uptake. The study adds to the literature by showing that even if a prostate lesion is FDG avid it is unlikely to be due to cancer. The commentary considers the management of incidental prostate FDG uptake on the basis of the available evidence.

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The study on the incidence of prostate cancer in patients with incidental fleurodeoxyglucose (FDG) foci in the prostate has provoked this commentary [1]. It is clearly established that, in general, prostate adenocarcinomas show no or mild FDG uptake [2–5]. However, poorly differentiated cancers or those with a rapid cell turnover owing to the acceleration of disease will have a greater uptake of FDG and show FDG-avid areas within the prostate [4]. Benign lesions can also show FDG uptake [5–7]. This creates a dilemma. How do we manage incidental foci of FDG uptake in the prostate gland?

Incidental FDG-avid prostate cancer is a very rare finding in patients who undergo FDG positron emission tomography (PET)/PET CT. 1 incidental FDG-avid prostate adenocarcinoma was found in a retrospective review of 1721 FDG PET CTs undertaken for the evaluation of known or suspected cancer [8]. A survey of 1197 FDG PET CTs in healthy volunteers who were part of a health screening programme, 4 prostate cancers were identified and only 1 was FDG avid [9]. 2 FDG-avid prostate cancers were found among 9347 asymptomatic members of a health screening plan comprising 24 772 health screening sessions [10]. 5 prostate cancers were identified in a cancer screening study comprising 4481 individuals, and 2 were FDG avid [11]. A similar study of 1283 patients found no FDG-avid prostatic cancers [12].

It is unclear from these studies what the likelihood is of an FDG-avid lesion being benign. This information will increase our knowledge and understanding of how to deal with the challenge of the further management of incidental foci of FDG uptake in the prostate gland.

Eun Ji Han's [1] study confirms the rarity of prostate cancer associated with incidental prostatic FDG uptake. The retrospective observational study included 5119

FDG PET CTs obtained as part of clinical workup for cancer, excluding those done for staging or restaging prostate cancer, and as a part of a health screening programme. Of the 5119 patients in this study, only 3 were confirmed as having FDG-avid prostate cancers [1].

Eun Ji Han's study adds to the literature by showing that even if a prostate lesion is FDG avid, it is unlikely to be due to cancer. 53 of 55 patients with focal FDG uptake were considered to have benign lesions. The estimate may be imprecise. The number of patients with focal FDG uptake in the prostate was small, eight cases were lost to follow-up and biopsy confirmation of benign pathology was made in only four cases. Benign FDG uptake was assumed if no disease was present, which included, in some cases, imaging at least a year later.

Eun Ji Han and his colleagues found that the maximum standardised uptake value (SUV) of the lesion and the prostate-specific antigen (PSA) did not indicate the malignant nature of the focal FDG uptake. There was considerable overlap of the maximum SUV between benign and malignant lesions, and in one patient with confirmed cancer the PSA was not elevated whereas in four patients with benign lesions the PSA was raised. Calcification in the presence of focal FDG uptake in the peripheral zone of the prostate was, however, associated with benign lesions, while peripheral zone subcapsular foci with no calcification were more likely to be malignant. Additional studies that analyse factors that discriminate between malignant and benign lesions based on FDG PET CT in combination with clinical parameters would enable refinement of the management of patients with incidental FDG prostate uptake.

What effect do these studies have on the further management of incidental prostate FDG uptake? In many patients who have an FDG PET CT as a part of their cancer workup, the primary cancer will determine the patient's clinical path, and focal FDG uptake in the prostate is irrelevant to the management of the patient. The reality is that many patients with incidental uptake will probably not require further consideration of the

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prostate abnormality because of comorbidity or the stage of their disease.

In other patients, on the basis of current evidence, incidental prostate FDG uptake is likely to represent benign disease. Only in a very small number of cases will it turn out to be due to cancer. Even then, such cancers must be treated with caution. Hillman highlighted the danger of assuming that finding an incidental and subclinical cancer is always of benefit to the patient [13]. It is well recognised that most men with prostate cancer die from other causes before the disease becomes symptomatic. It has been estimated that, before the advent of PSA screening, only 25% of prostate cancers were clinically detected [14]. Thus, treating asymptomatic prostate cancer, including those detected during FDG PET CT imaging, will contribute to overtreatment of prostate cancer [15]. This is a particular concern in older men. It is estimated that 23–42% of prostate cancers detected by screening represent overdiagnosis, and this rate may exceed 50% in men older than 75 years [16].

So how should incidental focal FDG uptake in the prostate be managed? Should the doctor not tell the patient about the lesion, taking the approach that the risk of an aggressive cancer is extremely low and it is therefore not justifiable to worry the patient? Or should the finding be presented to the patient, giving the patient the opportunity to make an informed decision as to his further management, taking into account the risks and benefits of pursuing the incidental finding? The learned late Lord Denning would have perhaps suggested that this is one discussion that should be held in the court of morals [17].

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