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EDITORIAL

^{18}F-FDG PET/CT in pancreatic adenocarcinoma: On the edge of a paradigm shift?

In the past few years, new therapeutic options have been developed for pancreatic ductal adenocarcinoma (PDA), paving the way for better overall survival. FOLFIRINOX regimen (i. e., an association of oxaliplatin, irinotecan, fluorouracil, and leucovorin) and Nab-paclitaxel plus Gemcitabine have become the validated regimens for the treatment of advanced PDA after two randomized trials have shown significant improvement in the median overall survival in patients receiving this treatment compared to those receiving gemcitabine [1,2].

PDA is the fourth leading cause of death from cancer in western countries and carries a grim prognosis with a 5-year survival rate of only 6% [3]. At a local stage, surgery offers the only chance for a cure, but the 5-year survival rate after surgical resection and adjuvant chemotherapy with modified FOLFIRINOX is only around 45% [4]. After a careful pre-therapeutic evaluation, only 15%—20% of patients with PDA are candidates for surgical resection. The initial workup appears as a crucial step and must search for a possible contra-indication such as distant metastases and the possibility of an R0 resection [5].

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Based on the importance of the radiological evaluation, Wartski et al. have highlighted the usefulness of ^{18}F-fluorodeoxyglucose positron emission tomography (^{18}F-FDG-PET/CT) in patients with PDA [6]. In the meantime, European and American guidelines do not recommend the use in routine practice of ^{18}F-FDG-PET/CT for PDA [7—9], given that the actual role of ^{18}F-FDG-PET/CT is still uncertain and needs some prospective studies for further validation. ^{18}F-FDG-PET/CT appears inconstantly positive in advanced PDA, particularly in mucin-producing or low-cellularity variants, or in patients with unbalanced diabetes mellitus [5].

Wartski et al. first highlighted some points of interests for ^{18}F-FDG-PET/CT in the initial staging of PDA, in order to propose the optimal therapy to patients. Occult distant metastases can be missed by CT and can be identified by ^{18}F-FDG-PET/CT. Such identification is of paramount importance because it will avoid an unnecessary laparoscopic approach in patients with advanced disease. Although it may be reasonably assumed that magnetic resonance imaging (MRI) might be better than CT for the detection of liver metastases from PDA, no comparative study exists to definitely confirm this assumption. Besides, ^{18}F-FDG-PET/CT might also identify lymph nodes involvement and guide the surgeon. This is particularly interesting given that the involvement of celiac and/or para-aortic lymph nodes in patients with PDA conveys a poor prognosis.

The recent update of the recommendations of good clinical practice for the use of ^{18}F-FDG-PET/CT in oncology discreetly opens the door for ^{18}F-FDG- PET/CT in the staging procedure of PDA [10]. Such a point of view could help clinicians reconsider the role of ^{18}F-FDG-PET/CT in future guidelines but deserves more data. However, it is important to note that ^{18}F-FDG-PET/CT is associated with false-positive findings that may erroneously contraindicate surgery, which is, to date, the only hope for cure in patients with PDA. In a meta-analysis including 7 eligible studies, a total of nineteen ^{18}F-FDG-PET/CT examinations showed false-positive findings, accounting for 7.8% of all ^{18}F-FDG-PET/CT examinations showing distant metastases [11]. Besides, one of the main concerns of surgeons for patients with potentially resectable PDA is vascular involvement by tumor. For this purpose, morphological imaging, such as CT and MRI, remains superior to ^{18}F-FDG-PET/CT.

Currently, in patients with potentially resectable PDA, the evaluation of vascular involvement remains a cornerstone of the initial assessment and should be performed with CT. Avoiding unnecessary resection by ruling out any distant metastasis is also underestimated and should be assessed, probably with MRI of the liver. In this setting, the role of ^{18}F-FDG-PET/CT could be discussed.

^{18}F-FDG-PET/CT deserves further evaluation concerning evaluation after induction therapy. Retrospective studies that addressed the issue of tumor response after induction therapy identified that CT staging was not predictive of resectability and pathological response to therapy [12,13]. Therefore, the physician has to assess the efficacy of treatment with an association of variables, including pain and CA 19-9 serum level changes. Interestingly, some studies have identified that the metabolic response on ^{18}F-FDG-PET/CT after induction therapy was associated with a better pathological response and a better outcome after surgery [14,15]. However, these studies included a small number of patients and need further validation with larger cohorts. In this regard, prospective studies to assess the potential of ^{18}F-FDG-PET/CT for evaluation of the response after neoadjuvant chemotherapy would be useful.

Also, concerning the initial parameters of PDA, a higher standardized uptake value (SUV_{max}) of the tumor would be associated with shorter survivals according to several studies [16—18]. However, the SUV_{max} cutoff value differs significantly among studies. Of note, diffusion-weighted MRI has also been evaluated in small prospective studies that identified that a low apparent diffuse coefficient value at baseline was associated with a poor response to standard chemoradiation [19]. It is also interesting to note that ^{18}F-FDG-PET/CT has presently no place for discriminating between PDA and chronic pancreatitis [10]. On the opposite, studies have shown that MRI might provide more information regarding pancreatic tumor characterization [20,21].

As a conclusion, as Wartski et al. pinpointed, ^{18}F-FDG-PET/CT might have a limited role in the initial management of PDA but could, with the addition of prospective and comparative studies, become a cornerstone of the evaluation process.

Disclosure of interest

The authors declare that they have no competing interest.

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