Interesting image

PET/triphasic contrast enhanced CT: Optimized protocol for the assessment of colorectal liver metastases

PET/TC trifásico con contraste: protocolo optimizado para la valoración de metástasis hepáticas de cáncer colorrectal

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The authors present a case of metastatic colorectal cancer successfully assessed and followed with a combined 18F FDG PET/triphasic contrast enhanced CT as a joint examination.

Two hepatic metastases were detected on the first post-surgical control in a patient diagnosed with colon adenocarcinoma (Fig. 1), thus neoadjuvant chemotherapy was established. Complete metabolic response was achieved after 5 chemotherapy cycles but morphologic images showed persisting remnants of both lesions (Fig. 2). Continuation of treatment allowed progressive decrease of remnants size, achieving millimetrical sizes after 12 cycles (nadir). Cessation of the chemotherapy led to re-growth of both lesions classified as recurrence.

Some meta-analyses confirm that 18F fluorodeoxyglucose (18F FDG) PET/CT is more sensitive than other diagnostic techniques for

Fig. 1. Contrast enhanced CT and standard (18F FDG) PET/CT acquired separately. The image shows two metastatic lesions, one per lobe, on morphologic images as well as on metabolic images as very hypermetabolic lesions (arrows). Furthermore in maximum intensity projection image it is observed abdominal uptake in surgical areas (laparotomy and resection of primary tumor).

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the detection of colorectal liver metastasis at the initial diagnosis as well as detection of recurrence after hepatectomy. However, other studies have shown that the sensitivity of 18F FDG PET on a per lesion basis is limited (from 54 to 65%).

There are limitations of the 18F FDG PET/CT performance related to the size of the lesion and previous use of neoadjuvant treatment. In those scenarios, as has been published, triphasic contrast enhanced abdominal CT is superior. Nonetheless, there is widespread uncertainty about the role of IV iodinated contrast material during PET/CT leading to duplication of studies (18F FDG PET/CT and contrast enhanced abdominal CT) in many patients, and most of them were done usually in different days. As it is shown in these images, the study duplication is unnecessary.

Although morphological remnant lesions might be very small, absence of significant hypermetabolism does not mean absence of viable tumor within the lesion. Indeed, the disease behavior on this patient leads to suspect chemotherapy induced selection of aggressive/resistant cell lines within the remnant lesions.

Definitely, the low diagnostic performance of 18F FDG PET in the neoadjuvant setting, stresses the importance of combined reading of PET and contrast enhanced CT images, specially the obtained in a joint acquisition.

References