Interesting image

Predictive value of the early metabolic response in patients with advanced-stage non-small cell lung cancer

Valor predictivo de la respuesta metabólica precoz en pacientes con cáncer de pulmón de célula no pequeña en estadio avanzado

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Fig. 1. Maximum intensity projection PET images. Axial fused PET/CT images. (A) Initial study. Increased uptake of $^{18}$F-FDG (SUV$_{max}$ 7.6) in the nodule located in the anterior segment, upper lobe of the left lung (1). Radiotracer uptake in subcarinal adenopathy (SUV$_{max}$ 9.1) related to tumor involvement (2). Heterogeneous metabolic activity in the left pleura, more intense in the middle posterior region (SUV$_{max}$ 11.6) related to tumor implants (3). (B) Early response assessment (one month). Resolution of the initial metabolic activity in the nodule located in the left upper lobe of the lung (1), in the subcarinal adenopathy (2), and in the middle posterior pleural implant (3). An early complete metabolic response is observed.

About 54% of the patients with non-small cell lung cancer (NSCLC) present disseminated disease at the time of diagnosis, with a 5-year survival of 3.8%.

The new therapies based on tyrosine kinase inhibitors of the epidermal growth factor receptor (EGFR), such as erlotinib, have shown an improvement in the rate of response and the length of survival in patients with advanced and metastatic NSCLC and have been approved by the “Food and Drug Administration” (FDA).

At present, patients with advanced NSCLC undergo a study of EGFR mutations in order to select patients who will most benefit from this new cytostatic therapy.

We present a 32-year-old, non-smoker, woman with lung adenocarcinoma. PET and CT staging showed an upper left pulmonary lesion, subcarinal adenopathies, left pleural effusion, and active tumor implants (T3N2M1, stage IV) (Fig. 1).

Molecular study identified an EGFR (+) mutation. The patient was treated with erlotinib (Tarceva).
To evaluate therapeutic response an early control at one month after initiating treatment was performed by contrast enhanced CT and PET. CT scan showed a 23% reduction in the number of measurable lesions, being the response classified as stable disease according to the RECIST 1.1 criteria. However, PET images showed a complete metabolic response (Fig. 2).

The RECIST 1.1 criteria are the standard method to assess therapeutic response in solid tumors, but the recent results published about the new cytostatic treatments have shown that early changes in the $^{18}$F-FDG uptake allow better identification of candidates for maintenance therapy\(^2,3\) (Figs. 1 and 2).

Based on these studies, in our case it was decided to maintain the therapy (follow-up of one year). CT control (every 3 months) revealed a partial response according to RECIST criteria (46% reduction in the number of measurable lesions). PET control (annual) revealed no reactivation of the lesions.

This case demonstrates the greater utility of the changes in $^{18}$F-FDG uptake over the RECIST 1.1 criteria in the prediction of early response to treatment. Partial morphological response may not be a selection criteria of maintenance of therapy due to the accumulative toxicity and the additional costs, with no clinical benefits\(^2,3\).

References