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

C. Moreno, S. Mourelo, M. Soler, M. Moragas, E. Riera, J.R. Garcia

CETIR Unitat PET/TC, Esplugues, Barcelona, Spain

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).
Fig. 2. Axial contrast enhanced CT images. (A) Initial study. Parenchymal pulmonary study shows a nodule of 15.6 mm in size in the anterior segment of the right upper lobe of the lung (1). Mediastinal study identified a conglomerate of subcarinal adenopathies (15.4 mm) (2). Left pleural effusion and partial loss of left lung volume with pleural implants, middle posterior of 38.9 mm in size (3). (B) Early response assessment (one month). Parenchymal pulmonary study shows a reduction in size (12.1 mm) of the nodule in the anterior segment, left upper lobe of the lung (1). Mediastinal study shows a reduction in size (13.8 mm) of the subcarinal adenopathy (2). Left pleural effusion reduction and middle posterior pleural implant diminution in size (26.5 mm) (3). The sum of these measurable lesions revealed a 25% reduction, being classified the response as stable disease according to the RECIST 1.1 criteria.

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$^3$ (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