A 26-year-old female patient with peritoneal implants from small-cell ovarian cancer diagnosed in 2011 was referred to our institution. By then she had undergone surgery without adjuvant treatment. In 2013, she developed local recurrence and retroperitoneal involvement and was treated with lymphadenectomy and adjuvant chemotherapy following radiotherapy over the peritoneal implants, with clinical remission. In the following year, she developed peritoneal implants, and in March 2015 she started nivolumab, with a very good response over the peritoneal implants. In May 2015, on her first follow-up computed tomography (CT) after nivolumab, there was a pulmonary consolidation with air bronchogram of the upper segment of the left lower lobe extending to visceral pleura, and new multiple small nodules ranging 5-10 mm were seen scattered bilaterally, some of which exhibited cavitation features (Fig. 1).

She was asymptomatic for any respiratory complaints. There was no fever, and laboratory white blood cell (WBC) count and C reactive protein (CRP) were within normal values. Although infection was then ruled out, she was prescribed with antibiotics and bronchodilators. Secondary involvement was unlikely because there were no prior pulmonary metastases, and peritoneal implants were almost indistinct on abdominopelvic magnetic resonance imaging.

On July 2015, a chest CT revealed a change in location of the consolidated areas: subsegmental right lower lobe and lingula consolidation complete resolution of the consolidation previously described in the upper segment of the left lower lobe (Fig. 2). There were fewer images of ground-glass opacities with inverted-halo morphology (atoll sign), scattered and bilaterally distributed along the distal small airways, suggesting organizing pneumonia pattern. There was a concomitant overall response in the peritoneal lesions. Again no respiratory symptoms were noticed. These findings were then interpreted as subacute interstitial pneumonia in a context of pulmonary toxicity can often be mistaken with infection or secondary involvement.

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pharmacologic toxicity. She was medicated with bronchodilator and low-dose corticosteroids.

On August 2015, chest CT revealed changes in the distribution of the interstitial lung involvement, with OP pattern predominance over the subacute exudative pneumonitis as seen previously without consolidations.

On November 2015, chest CT demonstrated a resolution ad integrum of the ground-glass opacities and nodular lesions (Fig. 3). These pulmonary changes were interpreted as organizing pneumonia due to nivolumab [1]. These changes have little expression on chest x-rays because the interstitial pattern along with the ground-glass involvement is better depicted on CT.

This type of idiopathic interstitial pneumonia commonly manifests in the 55- to 60-year age group, who may present with either mild symptoms (breathlessness, nonproductive cough, weight loss, fever) or no symptoms at all (asymptomatic). The findings are secondary to mild interstitial pneumonia in a context of pharmacologic toxicity.

Fig. 1 – CT in May 2015 depicts a pulmonary consolidation with air bronchogram of the upper segment of lower left lobe extending to visceral pleura along with new multiple small nodules ranging from 5 to 10 mm and scattered bilaterally, some of which may exhibit cavitation features. The findings were misinterpreted as possible inflammatory or infectious etiology.

Fig. 2 – CT in July 2015 shows a change in location of consolidated areas. New areas of consolidation: subsegmental-RLL and lingula complete resolution of the consolidation previously described in the upper segment of the LLL. Scattered images of ground-glass opacities with inverted-halo morphology (atoll sign), with preferential distribution along the distal small airways, suggesting organizing pneumonia pattern. These changes were in keeping with subacute interstitial pneumonia in a context of pharmacologic toxicity.
inflammation without fibrosis. In the distal airspaces, the inflammatory process may cause secondary bronchiolar occlusion, or what is known as bronchiolitis obliterans organizing pneumonia (BOOP). Patients usually benefit from bronchial dilators and low doses of corticosteroids with favorable outcome [1].

The literature has few isolated cases, namely, in melanoma patients where ipilimumab and nivolumab were given together. Presumably there is a similar mechanism as proposed for pulmonary side effects following rituximab with idiosyncratic host response with hypersensitivity component with initial onset following the treatments, often with complete remission and without need to discontinue treatment [2–4]. Pulmonary side effects of nivolumab are rare; for most symptomatic patients whose CT findings fail to reveal any respiratory problems caused by nivolumab, a pneumonitis pattern should be regarded as a possible side effect [5].

Fig. 3 – CT in November 2015 demonstrates a resolution ad integrum of the ground-glass opacities. There were no nodular lesions and no pleural or pericardial effusion.

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