

## Eosinophilic Pneumonia as a Paraneoplastic Manifestation of Colon Adenocarcinoma<sup>☆</sup>



### Neumonía eosinofílica como manifestación paraneoplásica de un adenocarcinoma de colon

To the Editor,

Eosinophilia in cancer is rare, but well characterized.<sup>1</sup> Paraneoplastic eosinophilia is most often associated with hematologic malignancies, but has also been reported in solid tumors.<sup>1</sup> This association usually reflects an aggressive course and poor prognosis.<sup>1</sup> Eosinophilic pneumonia (EP) has many causes, but is extremely rare in the context of cancer.<sup>2-5</sup> We report a case in a 53-year-old male smoker working at a paint factory. The patient had hypertension under treatment with an angiotensin-converting-enzyme inhibitor, but no other relevant medical or surgical history.

He had a 1-month history of dry cough, dyspnea on moderate exertion, and constitutional symptoms (weight loss, 5 kg). Physical examination revealed inspiratory crackles in the lower lungs and diffuse wheezing. Initial blood tests showed leukocytosis with eosinophilia (47.3%;  $6.20 \times 10^9/L$ ) and elevated C-reactive protein (93.9 mg/dL). Chest radiography showed diffuse, heterogeneous infiltrates, and moderate hypoxemia (PaO<sub>2</sub>, 64 mmHg) was detected. Sputum cultures for bacteria and staining for mycobacteria were negative.

A chest high-resolution computed tomography (CT) scan showed areas of subpleural ground-glass opacities, mainly in the upper lobes, areas of interlobular septal thickening in the lower lobes, and several enlarged mediastinal lymph nodes (Fig. 1). No endobronchial lesions were detected by bronchoscopy. Bronchoalveolar lavage total and differential cell counts revealed intense eosinophilic alveolitis (39%), but no microorganisms or malignant cells. Adenocarcinoma cells were detected on endobronchial ultrasonography with transbronchial biopsy of the mediastinal lymph nodes. All possible causes of EP were excluded. Meanwhile, an abdominopelvic CT scan revealed a neoplastic mass at the hepatic flexure of the colon, in addition to several hepatic metastatic lesions. Despite high corticosteroid doses and chemotherapy with FOLFIRI (folinic acid, fluorouracil, and irinotecan), the patient continued to deteriorate, with respiratory failure and progression of radiological lesions, and died just 2 months after the diagnosis.

This is the first case reporting EP as a primary manifestation of colon cancer. To our knowledge, there have only been 4 reports of EP as a paraneoplastic syndrome.<sup>2-5</sup> Many explanations have been proposed for cancer-related hypereosinophilia, but the most consistent seems to be related with bone marrow stimulation through circulatory factors secreted by the tumor (interleukin [IL] 5, IL-3, and colony stimulating factors G-CSF and GM-CSF).<sup>1</sup>

The association of hypereosinophilia with EP in the absence of other organ damage is not clear, although it could be related to early lung metastasis and local eosinophilic proliferation, as appears to have been the case in the other reports of cancer-associated EP.<sup>2-5</sup> Peripheral eosinophilia in a malignant context is usually a sign of disseminated disease, and is associated with a poor prognosis.<sup>1</sup> Nevertheless, metastatic disease was present in most but not all of the cases of malignant EP described to date.<sup>2-5</sup> Variable outcomes were reported, and metastasis would appear to be more closely related to the type and extent of cancer involved than to the presence of EP.<sup>2-5</sup> Besides corticosteroids, no specific treatment for EP in this context has been defined.<sup>2-5</sup> In all events, the presence of hypereosinophilia demands an extensive work-up, and paraneoplastic phenomena must be considered in all cases.

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#### References

1. Verstraeten AS, de Weerd A, van Den Eynden G, van Marck E, Snoeckx A, Jorens PG. Excessive eosinophilia as paraneoplastic syndrome in a patient with non-small-cell lung carcinoma: a case report and review of the literature. *Acta Clin Belg.* 2011;66:293-7.
2. Ishiguro T, Kimura H, Araya T, Minato H, Katayama N, Yasui M, et al. Eosinophilic pneumonia and thoracic metastases as an initial manifestation of prostatic carcinoma. *Intern Med.* 2008;47:1419-23.
3. Horie S, Okubo Y, Suzuki J, Isobe M. An emaciated man with eosinophilic pneumonia. *Lancet.* 1996;348:166.
4. Valdivia-Arenas MA, Khayat R. An asian woman with eosinophilia and bilateral pulmonary infiltrates. *Respiration.* 2007;74:224-7.

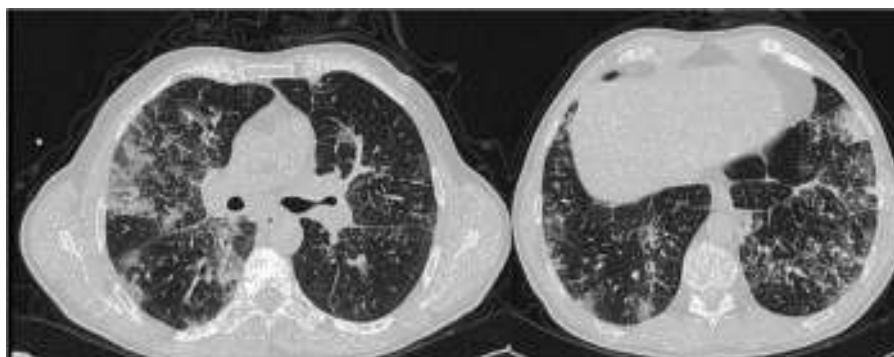


Fig. 1. Chest computed tomography scan showing areas of subpleural ground-glass opacities, mainly in the upper lobes, and areas of interlobular septal thickening, mainly in the lower lobes.

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5. Kalra A, Fabius D, Gajera M, Palaniswamy C. Triad of interstitial pneumonia, eosinophilia, and eosinophilic pleural effusion: a rare paraneoplastic manifestation of lung adenocarcinoma. *Chest*. 2010;138(4.Meeting Abstracts):101A.

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## Intrapulmonary Solitary Fibrous Tumors: Benign or Malignant?☆



### Tumor fibroso solitario intrapulmonar: ¿benigno o maligno?

To the Editor,

We report the case of a 59-year-old woman with a pulmonary mass, who presented due to a 3-month history of discomfort in the left hemithorax. Chest computed tomography showed a mass of 67 mm×87 mm with defined borders, soft-tissue density, and peripheral calcifications, in the lower left lobe; and, in the same lobe, another lesion with the same characteristics, measuring 26 mm×39 mm.

Clinical staging was negative, and 15 days after diagnosis a left lower lobectomy was performed with resection extended to the diaphragm. The pathology report revealed 2 tumors, one 80 mm×63 mm and the other 45 mm×34 mm, with disease-free margins. Both tumors had the same microscopy report of spindle cell neoplasm with lengthened, hyperchromatic nuclei, and areas of epithelioid cells. Diaphragmatic muscle fibers showed no signs of malignant infiltration. Immunohistochemistry was positive for CD34 and Bcl-2, with Ki67 proliferation index of 2%. Diagnosis was intrapulmonary fibrous tumor with pleural involvement.

The patient remained asymptomatic and disease-free until 16 months after the intervention, when multiple nodules consistent with metastases were detected in the lungs, pleura, liver, bone, and muscles (Fig. 1).

A lung biopsy was performed and the pathology findings showed the same microscopic characteristics as the previous lesions, with a Ki67 proliferation index of 10%.

Metastatic fibrous tumor was diagnosed and the chemotherapy committee decided to administer 4 cycles of doxorubicin.

The disease progressed with tumor growth, pain, cholestasis, pyloric syndrome, and dyspnea. Subsequently, an incisional biopsy of a lesion on the patient's forearm revealed the same tumor characteristics, but this time Ki67 proliferation index was 25%.

Currently, 2 years after diagnosis, the patient is receiving second-line paclitaxel, with little response, and local radiation therapy.<sup>1,2</sup>

Intrapulmonary fibrous tumor forms from submesothelial fibroblasts in the pulmonary parenchyma, and is very rare.<sup>3</sup> It is a slow growing tumor, with a benign course, and detection is incidental. Even more rare is the malignant form, which we present here.

Radiologically, it is visualized as a nodule with defined borders, with or without internal calcifications, and heterogeneous uptake of intravenous contrast medium.<sup>4</sup> The histological features



**Fig. 1.** (A) Chest computed tomography, showing a 25-mm nodular image in the basal segment of the right lung field. (B) Tomography slice of the abdomen, showing a mass in liver segment V, measuring approximately 30 mm. (C) Magnetic resonance image of nodular formation located between the muscle planes of the palm and distal third of the right forearm, 50 mm×30 mm×20 mm.

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