



Figure 1. Bilateral micronodular pattern in a thoracic computerized tomography image with multiplanar reconstruction (MIP).

cases is of a serious nature.^{1,2,4} The pathogenesis of systemic involvement is a subject of discussion. While some authors believe that this is a systemic infection due to hematogenous spread from the bladder, others believe it is a type IV hypersensitivity mechanism to the BCG, based on the negative Ziehl-Neelsen staining and cultures.²⁻⁴ The factors that guide the diagnosis of infection spread include staining or positive mycobacterial culture and the presence of noncaseating granulomas in distant places.^{3,4} In this case, although the stain and culture for mycobacteria were negative, noncaseating granulomas were found and nucleic acid was detected from the *M. tuberculosis complex* group by PCR in the BTB, which, together with the history of BCG administration, made the diagnosis of TBM by BCG very likely. However, the histological and PCR findings could also be due to affectation by *M. tuberculosis* or another species of the *M. tuberculosis complex* group.

The uniqueness of this case is that the patient reported no respiratory or general symptoms, and the findings were accidental

after performing a radiologic examination for another reason. In all cases described in the literature of TBM after intravesical BCG administration, they presented with a major general syndrome including fever, which often progressed to respiratory failure and death, despite adequate treatment in some cases.^{4,5} However, this is the first case of asymptomatic TBM secondary to BCG administration reported in the literature, which may be due to an accidental finding at an early stage of the disease or the possibility not mentioned until now of the involvement of a silent, self-limiting military subtype of this bacillus in an immunocompetent individual.

References

1. Koga H, Kuroda M, Kudo S, Yamaguchi A, Usami M, Suzuki T, et al. Adverse drug reactions of intravesical bacillus Calmette-Guérin instillation and risk factors of the development of adverse drug reactions in superficial cancer and carcinoma in situ of the bladder. *Int J Urol.* 2005;12:145-51.
2. Lamm DL, Van der Meijden APM, Morales A, Brosnan SA, Catalona WJ, Herr HW, et al. Incidence and treatment of complications of Bacillus Calmette-Guérin intravesical therapy in superficial bladder cancer. *J Urol.* 1992;147:596-600.
3. Gonzalez OY, Musher DM, Brar I, Furgeson S, Boktour MR, Septimus EJ, et al. Spectrum of bacille Calmette-Guérin (BCG) infection after intravesical BCG immunotherapy. *Clin Infect Dis.* 2003;36:140-8.
4. Elkabani M, Greene JN, Vincent AL, VanHook S, Sandin RL. Disseminated *Mycobacterium bovis* after intravesical bacillus Calmette-Guérin treatments for bladder cancer. *Cancer Control.* 2000;7:476-81.
5. Youssef M, Carre P, Asquier E, Janin P, Lemarie E, Diot P. Miliary pulmonary tuberculosis following intravesical BCG-therapy. *Rev Pneumol Clin.* 2003;59:201-4.

Ana Cobas Paz,^a José Luís García Tejedor,^b Ana González Piñeiro^c and Alberto Fernández-Villar^{a,*}

^aServicio de Neumología, Complejo Hospitalario Universitario de Vigo, Vigo, Spain

^bRadiodiagnóstico Complejo Hospitalario Universitario de Vigo, Vigo, Spain

^cAnatomía Patológica, Complejo Hospitalario Universitario de Vigo, Vigo, Spain

*Corresponding author.

E-mail address: alberto.fernandez.villar@sergas.es (A. Fernández-Villar).

Micronodular X-ray Pattern as a Manifestation of a Lung Adenocarcinoma

Patrón radiológico micronodular como manifestación de un adenocarcinoma pulmonar

To the Editor:

The radiological appearance of multiple micronodules as a presentation of a lung tumour has been reported, although it is very rare (fig. 1).

We present the case of a 71-year old woman, a never smoker, with no known drug allergies and with a history of hypertension, iatrogenic hyperthyroidism, epilepsy and surgical resection of ovarian cysts. She was being treated with levothyroxine, valproic acid, omeprazol, captopril and diclofenac. At baseline, she showed no respiratory symptoms. She was admitted after a month of progressive dyspnea until symptoms appeared in activities minimal effort, coughing with slight mucous expectoration, wheezing, pleuritic rib pain on both sides and two-pillow orthopnea. During this time she had received treatment with antibiotics and corticoids and showed no improvement. There was no history of having been exposed to

smoke nor environmental particles in the workplace. She had a dog as a pet. Four months earlier a neighbour installed a henhouse at the side of her terraced home. Physical examination showed baseline arterial oxygen saturation of 80%, tachypnea while talking at 30 rpm and crackling in the left posterior hemithorax except for the apex. Hospital admission tests revealed: leukocytosis: 1.1700/UI with 79% neutrophils, blood gas analysis conducted with unknown O₂: ApO₂: 80 mmHg; PCO₂: 30 mmHg; pH: 7.52; HCO₃⁻: 26 mEq; SaO₂: 97%. Chest X-ray showed a diffuse interstitial and alveolar pattern with a tendency to coalesce. In the chest CT numerous micromodules spread in a random fashion could be observed throughout the lung parenchyma with confluent, condensatory patchy areas of a cottony alveolar nature, accompanied by mild right and moderate left pleural effusion as well as scarce and insignificant mediastinal adenopathies. While she was admitted, other studies were performed including: Diagnostic thoracentesis showing lymphocytic exudate whose cytology was inspecific; blood chemistry showing IgG against *Coxiella* 1/160 with negative IgM; sputum study in which *Candida albicans* was isolated (possible oropharyngeal contamination), smear negative; elevation of tumour markers CA 15.3, CA 125 and CEA; angiotensin enzyme converter within normal values; mammography, showing a 9 mm nodule in the right breast with likely benign origin



Figure 1. Micronodular X-ray pattern as a manifestation of a lung adenocarcinoma.

and for which a 6-month follow-up was recommended; gynaecological examination ruled out gynaecological pathology; negative precipitins against hen serum, flexible bronchoscopy that only revealed rough-looking mucous of the left main bronchus without signs of infiltration or endobronchial masses. PET: hypermetabolic lesions in both lung parenchyma, mediastinal nodes, infradiaphragmatic nodes, pleura, bone and more uncertainly laterocervical ganglia, highly suspicious of malignancy without completely ruling out infectious aetiology (tuberculosis).

Although the results of the tests performed were inconclusive they indicated tumour pathology. The Thoracic Surgery Department was therefore contacted, performing a left thoracoscopy, which extracted 700 cc of yellowish liquid and visualising neoplastic-looking implants in the parietal and diaphragmatic pleura. There

were multiple lung nodules, great parenchymal involvement and patchy nodular affectation of the parietal pleura. The pathology result reports infiltration by adenocarcinoma of probable pulmonary origin.

Although the X-ray presentation of a lung tumour as a micronodular pattern has been reported,¹ it is very rare and often difficult to interpret. There are reported cases of lung tumours showing ground-glass opacity,³ which can be seen in bronchioloalveolar carcinoma and adenocarcinoma, but this is also very rare.³ In this case, pathology reports an adenocarcinoma of probable pulmonary origin. Given that no autopsy was performed, it is not possible to state for certain, however, the complementary tests performed found no evidence of primary tumours in other organs. This concurs with the results of the study carried out by Al-Brahim⁴ which found that adenocarcinoma is the tumour that is most frequently presented with multiple metastases and that the locations of the primary tumour are most frequently the lung and the large intestine, respectively.

References

1. Heuck F, Roloff FW. The small nodular pattern of primary and secondary lung neoplasia. *Radiologe*. 1979;19:475-82.
2. Park CM, Goo JM, Lee HJ, Chun EJ, Im JG. Nodular ground-glass opacity at this-section CT: histologic correlation and evaluation of change at follow-up. *Radiographics*. 2007;27:391-408.
3. Multiple lung metastases presenting as ground-glass opacities in a pulmonary adenocarcinoma: a case report. *Cases journal [electronic journal]* 2009; 2:6910 [accessed 09-12-2009]: available from: <http://www.sjournal.com/casesjournal/article/view/6910>.
4. Al-Brahim N, Ross C, Carter B, Cjorneyko K. The value of post-mortem examination in cases of metastasis of unknown origin-20-year retrospective data from a tertiary care center. *Ann Diagn Pathol*. 2005;9:77-80.

Patricia Mejía-Lozano,^{a,*} Enrique Pérez Ortiz^b and Carolina Puchas Manchón^c

^a*Servicio de Neumología, Hospital Gutiérrez Ortega, Valdepeñas, Ciudad Real, Spain.*

^b*Servicio Urgencias Externas, Hospital Gutiérrez Ortega, Valdepeñas, Ciudad Real, Spain*

^c*Servicio Urgencias Externas, Hospital Juan Ramón Jiménez, Huelva, Spain*

*Corresponding author.

E-mail address: patriciamejia@terra.es (P. Mejía-Lozano).

Bronchial Thermoplasty in Asthma: An Updated Review

Actualización de la revisión de termoplastia bronquial en el asma

To the Editor:

The review "Bronchial Thermoplasty in the Treatment of Asthma" published in the *Archivos de Bronconeumología* in February 2010 explained the multi-centre, double-blind clinical trial that was completed, which compared patients receiving asthma treatment by bronchial thermoplasty with those in a sham bronchoscopy group.

In the American Journal of Respiratory and Critical Care Medicine of January 2010 the results of the above clinical trial are published,² which is an important complement to this review and also motivate this letter.

This new study analysed 288 patients who had persistent, moderate-severe and not well-controlled asthma despite treatment with a dose of inhaled glucocorticoids greater than 1,000 µg/day of inhaled beclomethasone and beta-2-adrenergic agonist at a dose

equivalent of salmeterol equal to or greater than 100 µg/day. The patients may also have been taking leukotriene antagonists, omalizumab and oral glucocorticoids at doses equal to or less than 10 µg/day of prednisone or its equivalent.

The subjects were randomly divided into 2 groups: the first (n = 190) received treatment with 3 bronchial thermoplasty sessions and the second (n = 98) received treatment with 3 sessions of placebo bronchial thermoplasty using a device that simulates the appearance and sound of the radiofrequency generator. This was a double-blind study meaning that neither the patient nor the medical team in charge of the bronchoscopy and the care of the patient knew which treatment was being used.

The individuals were evaluated at 3, 6, and 12 months, and the primary study variable was changes in the questionnaire about asthma-related quality of life. Other variables examined were global quality of life, control over asthma, days without symptoms, morning PEF, rescue medication, FEV₁ and exacerbations.

The results of the study show that the group with thermoplasty had greater improvement in the asthma-related quality of life