Case Report

Inflammatory Myofibroblastic Tumour: Report of a Rare Form with Exclusive Pleural Involvement

Gustavo Nobre de Jesus, Sara Lemos Rocha, João Madeira Lopes, João Meneses Santos, Pedro Soares Oliveira, and Rui M. M. Victorino

1 Medicina 2, Hospital de Santa Maria/CHLN, Faculdade de Medicina da Universidade de Lisboa, Avenida Egas Moniz, 1649-035 Lisboa, Portugal
2 Departamento de Anatomia Patológica, Hospital da Luz, Avenida Lusiada, 1500-650 Lisboa, Portugal

Correspondence should be addressed to Gustavo Nobre de Jesus; gustavonjesus@gmail.com

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Inflammatory myofibroblastic tumour (IMT) is a rare sclero-inflammatory lesion, characterized by a myofibroblastic proliferation with variable infiltration of inflammatory cells that may rarely present calcifications [2]. Chromosomal clonal anomalies, histological transformation, and metastasis have been described in case reports, and a recurrence rate as high as 25% has been observed [3]. We report a form of IMT with exclusive pleural involvement that illustrates the complex differential diagnosis of this entity [4, 5].

1. Introduction

The sclero-inflammatory diseases have a wide range of aetiologies and their differential diagnosis is often complex [1]. Inflammatory myofibroblastic tumour (IMT) consists of a myofibroblastic proliferation with variable infiltration of inflammatory cells that may rarely present calcifications [2]. Chromosomal clonal anomalies, histological transformation, and metastasis have been described in case reports, and a recurrence rate as high as 25% has been observed [3]. We report a form of IMT with exclusive pleural involvement that illustrates the complex differential diagnosis of this entity [4, 5].

2. Case Report

A 28-year-old female patient presented with a 3-month history of continuous right posterior thoracalgia, with limited response to analgesics. Physical examination showed a pleural rub but was otherwise unremarkable. Laboratory examinations revealed thrombocytosis (511 000/mm³), erythrocyte sedimentation rate (ESR) of 79 mm, and C-reactive protein (CRP) of 9.24 mg/dL, with normal hepatic and renal function, as well as the remainder of blood count.

Abdominal ultrasound and initial chest X-ray were normal. Thoracic CT (Figure 1) showed right posterior pleural thickening, pleural effusion, and passive atelectasis. Further investigation revealed negative IGRA (Interferon-Gamma Release Assay) in peripheral blood, as well as sputum and blood cultures. HIV antibodies were negative and no autoantibodies (ANA, ANCA, and anti-DS-DNA) were detected. IgG subclasses determination was normal, with special reference of an IgG4 near the lower limit of normality (6.0 mg/dL).

Cultural analysis of CT-guided thoracocentesis was negative, including screening for Legionella, Mycobacterium tuberculosis, and fungus. Cytology and histology of pleural biopsy revealed nonspecific inflammatory cells and were negative for neoplastic cells. The patient was submitted to surgical removal of the entire pleural mass, which measured 3 × 9 cm. Histopathologic examination revealed an inflammatory hypocellular sclerosing process with disperse lymphoid aggregates. There were no signs of granulomas, calcifications, or neoplastic cells. Immunohistochemistry showed strong focal positivity for vimentin and nonspecific actin, focal positivity for FXIIIa, and negativity for ALK (anaplastic lymphoma kinase), CD34, and calretinin (Figure 2). A diagnosis of IMT was established based on the correlation between the morphological and immunocytochemistry findings. Six
months after surgery, the patient was asymptomatic, with no evidence of relapse.

3. Discussion

IMT is a rare entity, of unknown aetiology, that accounts for less than 1% of all pulmonary tumours [2]. The lung is a commonly affected organ although nonpulmonary locations are well recognized. Pleural involvement has been described but occurs as extension of the pulmonary IMT. One case of possible exclusive pleural involvement has been recently described [5]. But, in contrast to our case, where the mass is strictly pleural, in Loeffler-Ragg’s report there was a mediastinal mass with extension to the pleura.

In our case, infectious, neoplastic, and autoimmune aetiologies were initially excluded, as well as IgG4-related disease. Interestingly, calcifying fibrous pseudotumour (CFPT) was a diagnosis initially considered but immunohistochemistry established the final diagnosis of IMT. The differential diagnosis between those two entities was particularly difficult since some clinical and histological characteristics were consistent with CFPT, namely, the absence of systemic symptoms, the unique pleural involvement, and the histological advanced stage of sclerosis. However, the absence of calcifications and the immunohistochemistry confirmed the diagnosis of IMT, although it is noteworthy that a relationship between these two entities has been suggested in previous studies [6].
Fetsch and other authors [4, 6] previously proposed that CFPT could represent a sclerosed end-stage of IMT, as a “burned-out” lesion, similar to other pseudotumours. In fact, both can histologically present with different degrees of calcifications. A case has been reported of a patient with multiple masses containing histological features of both entities and Sigel described a CFPT with focal ALK expression [1, 6–8]. Nevertheless, it is now recognized that there are clear immunohistochemistry differences between CFPT and IMT and a definite relationship has not been established.

The etiopathogenesis of IMT still remains controversial, as illustrated by the frequent changes in nomenclature, the variety of clinical forms, and the diversity of pathological explanations. Patients may present with symptoms such as fever or weight loss, pain, or malaise, although around 70% may be asymptomatic [1]. In the past 10 years, several approaches have been made to investigate the pathogenesis of IMT. Cellular atypia, DNA aneuploidy, and signs of malignancy transformation have been described [3]. Although 30 to 40% are ALK positive and this subgroup has a worse prognosis, a clear relationship with the development of lymphomas has not been confirmed [9, 10]. An infectious-reactive entity has also been proposed (from Epstein-Barr virus to Gram + bacteria), since microorganisms have been identified in some case reports, but again conclusive evidence is still missing [6, 11, 12]. This wide range of clinicopathological forms may suggest that IMT is a spectrum of many entities, including several inflammatory or reactive tumour-like lesions [1, 7, 10].

IMT is considered to be a neoplasm of intermediate biological potential, which can recur and infrequently metastasize. Histologically, it is characterized by myofibroblastic spindle cells mixed with a hyalinised stroma that appear among various degrees of inflammation infiltrates. Typical immunohistochemistry is diffusely positive for actin, locally positive for FXIIIa, and negative for CD34 [1, 7, 10]. Surgical removal remains the gold-standard therapy. Immunomodulation has been debated as a therapeutical choice since recurrences have been documented up to 11 years after surgery, but it still lacks definite scientific evidence [13, 14]. Given its rarity, there are no guideline-based orientations for diagnosis. We suggest that the diagnostic approach resembles the neoplastic conditions, and clinical suspicion should lead to prompt specific immunohistochemistry studies, critical for definite diagnosis.

In conclusion, the description of this form of exclusive pleural IMT adds to the previously reported clinical spectrum of this rare and poorly understood entity.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

References

[1] K. A. Hill, F. Gonzalez-Crussi, and P. M. Chou, “Calcifying fibrous pseudotumor versus inflammatory myofibroblastic tumor: a histological and immunohistochemical comparison,” Modern Pathology, vol. 14, no. 8, pp. 784–790, 2001.
[2] R. J. Cerfolo, M. S. Allen, A. G. Nascimento et al., “Inflammatory pseudotumors of the lung,” Annals of Thoracic Surgery, vol. 67, no. 4, pp. 933–936, 1999.
[3] A. F. Nascimento, R. Ruiz, J. L. Hornick, and C. D. M. Fletcher, “Calcifying fibrous “pseudotumor”: clinicopathologic study of 15 cases and analysis of its relationship to inflammatory myofibroblastic tumor,” International Journal of Surgical Pathology, vol. 10, no. 3, pp. 189–196, 2002.
[4] J. F. Fetsch, E. A. Montgomery, and J. M. Meis, “Calcifying fibrous pseudotumor,” The American Journal of Surgical Pathology, vol. 17, no. 5, pp. 502–508, 1993.
[5] J. Loeffler-Ragg, J. Bodner, M. Freund et al., “Diagnostic and therapeutic challenges of a large pleural inflammatory myofibroblastic tumor,” Case Reports in Pulmonology, vol. 2012, Article ID 102196, 5 pages, 2012.
[6] J. van Dorpe, N. Ectors, K. Geboes, A. D’Hoore, and R. Sciot, “Is calcifying fibrous pseudotumor a late sclerosing stage of inflammatory myofibroblastic tumor?” American Journal of Surgical Pathology, vol. 23, no. 3, pp. 329–335, 1999.
[7] C. M. Coffin, A. Patel, S. Perkins, K. S. J. Elenitoba-Johnson, E. Perlman, and C. A. Griffin, “ALK1 and p80 expression and chromosomal rearrangements involving 2p23 in inflammatory myofibroblastic tumor,” Modern Pathology, vol. 14, no. 6, pp. 569–576, 2001.
[8] J. E. Sigel, T. A. Smith, J. D. Reith, and J. R. Goldblum, “Immunohistochemical analysis of anaplastic lymphoma kinase expression in deep soft tissue calcifying fibrous pseudotumor: evidence of a late sclerosing stage of inflammatory myofibroblastic tumor?” Annals of Diagnostic Pathology, vol. 5, no. 1, pp. 10–14, 2001.
[9] C. A. Griffin, A. L. Hawkins, C. Dvorak, C. Henkele, T. Ellingham, and E. J. Perlman, “Recurrent involvement of 2p23 in inflammatory myofibroblastic tumors,” Cancer Research, vol. 59, no. 12, pp. 2776–2780, 1999.
[10] C. M. Coffin, J. L. Hornick, and C. D. M. Fletcher, “Inflammatory myofibroblastic tumor: comparison of clinicopathologic, histologic, and immunohistochemical features including ALK expression in atypical and aggressive cases,” The American Journal of Surgical Pathology, vol. 31, no. 4, pp. 509–520, 2007.
[11] J. K. C. Chan, “Inflammatory pseudotumor: a family of lesions of diverse nature and etiologies,” Advances in Anatomic Pathology, vol. 3, no. 3, pp. 156–171, 1996.
[12] J. T. Lewis, R. L. Gaffney, M. B. Casey, M. A. Farrell, W. G. Morice, and W. R. Macon, “Inflammatory pseudotumor of the spleen associated with a clonal Epstein-Barr virus genome: case report and review of the literature,” The American Journal of Clinical Pathology, vol. 120, no. 1, pp. 56–61, 2003.
[13] P. B. Weinberg, P. A. Bromberg, and F. B. Askin, “‘Recurrence’ of a plasma cell granuloma 11 years after initial resection,” Southern Medical Journal, vol. 80, no. 4, pp. 519–521, 1987.
[14] S. J. Kovach, A. C. Fischer, P. J. Katzman et al., “Inflammatory myofibroblastic tumors,” Journal of Surgical Oncology, vol. 94, no. 5, pp. 385–391, 2006.