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CASE STUDY

Bronchiolitis obliterans organizing pneumonia associated with polymyalgia rheumatica

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Bronchiolitis obliterans organizing pneumonia associated with polymyalgia rheumatica. C. Stey, K. Truninger, D. Marti, P. Vogt, T.C. Medici. ©ERS Journals Ltd 1999.
ABSTRACT: The association of bronchiolitis obliterans organizing pneumonia (BOOP) with polymyalgia rheumatica is rare, and only one case has previously been described. This study reports on the case of an 80 yr-old male who presented with malaise, nonproductive cough and exertional dyspnoea for several weeks, along with a history of bilateral shoulder and pelvic girdle pain of several months' duration. The chest radiograph revealed a pneumonic infiltrate in the right lower lobe, which was unresponsive to antibiotics. Bronchoscopy, bronchoalveolar lavage and a transbronchial lung biopsy established the diagnosis of BOOP. The patient improved consistantly on steroids. As in other connective diseases, organizing pneumonia may be one of the early manifestations of polymyalgia rheumatica.
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Polymyalgia rheumatica is a frequent clinical syndrome seen mainly in elderly patients. It often presents a diagnostic challenge, because of a large differential diagnosis including malignant neoplasms or connective tissue diseases [1]. The estimated prevalence in persons older than 50 yrs is 0.5% in the USA [1, 2]. Lung involvement in polymyalgia rheumatica is rare and has been observed in the form of respiratory symptoms such as cough due to upper airway inflammation or vasculitis, pulmonary nodules and infiltrates or vasculitis of the pulmonary arteries or smaller pulmonary blood vessels [3–6]. Organizing pneumonia is a common pattern of injury and repair seen in a number of different clinical settings, mainly connective tissue disease or exposure to drugs [7, 8]. The association of organizing pneumonia with polymyalgia rheumatica has been reported only once [9], hence the present report.

Case report

A 80 yr-old white male presented at the outpatient clinic because of a history of several months of bilateral aches and stiffness involving the shoulders and pelvic girdle. Subsequently, he developed a nonproductive cough and slight dyspnoea on exertion. He complained of malaise, fatigue, depression, and 4 kg of weight loss in the last 2 months. The patient was a retired mason, with no history of recent respiratory tract infection. He had never smoked and had had no dermatoses or allergies. He had taken hydrocodeine for 1 month because of the cough. He denied taking any other drugs, even in the past few years.

At admission, he had no fever. Physical examination of the heart and lungs was normal. The temporal arteries were neither tender nor pulseless, and he had no pain or swelling of the peripheral joints. A slight rigour of both forearms and reduced sensitivity in his lower legs were noticed. The white blood cell count (WBC), including eosinophils, was normal. The haemoglobin was 12.4 $g \cdot dL^{-1}$ (normal =14.4–17.5 $g \cdot dL^{-1}$) with a normal mean corpuscular volume. The erythrocyte sedimentation rate (ESR) was 46 mm in 1 h (normal <20) and the C-reactive protein (CRP) 62 $mg \cdot L^{-1}$ (normal <10 $mg \cdot L^{-1}$). Serum electrophoresis showed a normal pattern. Creatine phosphokinase and levels of vitamin B12 and folic acid were normal. Serological tests for *Borellia burgdorferi* were negative. The chest radiograph showed an infiltrate in the right lower lobe. Community-acquired pneumonia was suggested and the patient was started on clarithromycin 250 mg *b.i.d.* However, he remained ill, with progressive weakness and persistent cough. The WBC rose to 14,000 cells·μL^{-1} and the CRP to 140 $mg \cdot L^{-1}$. The chest radiograph showed progression of the unifocal infiltrate (fig. 1). Pulmonary function was not evaluated. Bronchoscopy, bronchoalveolar lavage (BAL) and transbronchial biopsy (TBB) were performed. Middle and right lower lobe bronchi displayed mucosal inflammation. The differential BAL cell count was lymphocytes 64% (CD4+ and CD8+ counts were not performed) and macrophages 27%. Stains for bacteria, fungi, *Pneumocystis carinii* and acid-fast bacilli were all negative. Cultures of the BAL fluid and of TBB specimens remained sterile. Histology of the TBB material showed a lymphocytic infiltrate with some neutrophils and intra-alveolar fibrosis, but no malignant cells (fig. 2). The histological pattern was consistent with bronchiolitis obliterans organizing pneumonia (BOOP) [7], in that it showed plugs of fibroblastic tissue within distal air passages and an infiltrate of mononuclear cells in the perobronchiolar interstitium.

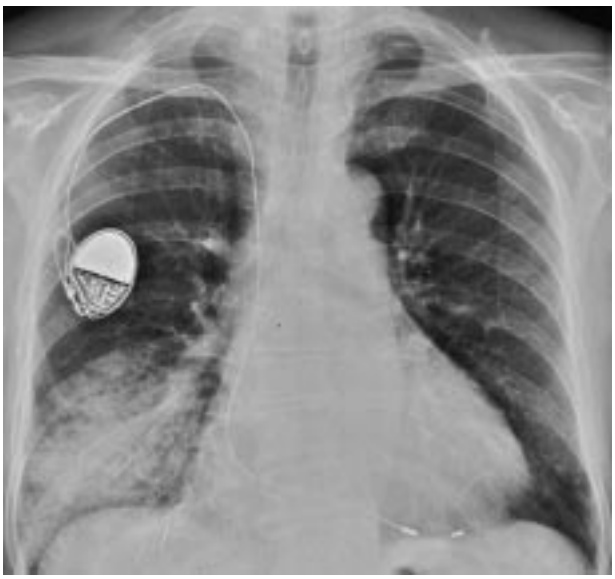

Fig. 1. – Chest radiograph showing alveolar consolidation in the right lower lung field.

The patient was given oral prednisone 100 mg·day^{-1} and he improved within a few days. The 100-mg dosage was continued for a total of 10 days. Then, prednisone was tapered to 60 mg and 50 mg·day^{-1} for 1 week each. The patient felt well and the cough had disappeared completely at a follow-up visit at 2 weeks. The ESR had dropped to 8 mm in 1 h. The dosage of prednisone was decreased to 40 mg for 1 month. The CRP normalized after 4 weeks and the haemoglobin level after 2 months. The pulmonary infiltrate cleared progressively within 3 months. At 6 months, the chest radiograph was normal. Prednisone was progressively tapered within 6 months, with no recurrence of respiratory symptoms.

Three weeks after withdrawal of steroids, aching and stiffness of the shoulders and of the pelvic girdle recurred. The patient also complained of abdominal discomfort and he lost 2 kg in weight. The ESR rose to 78 mm in 1 h and the CRP to 31 mg·L^{-1}. The haemoglobin was 11.9 g·dL^{-1}.

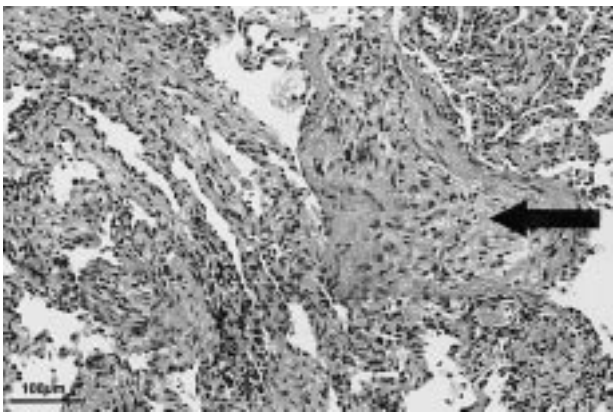

Fig. 2. – Transbronchial lung biopsy specimen showing plugs of fibroblastic tissue within a distal air passage (arrow) and an infiltrate of mononuclear cells in the peribronchiolar interstitium. (Haematoxylin and eosin stain; original magnification × 80; internal scale bar = 100 μm.)

The chest radiograph remained normal. Pulmonary function tests showed a restrictive ventilatory defect, with total lung capacity (TLC), forced vital capacity (FVC) and forced expiratory volume in one second (FEV_1) of 5.49 L (80% predicted), 2.96 (82% pred) and 2.12 (79% pred), respectively. The transfer factor for carbon monoxide was 1.23 mmol·kPa^{-1}·min^{-1}·L^{-1} (79% pred). An abdominal ultrasound study, gastroscopy and colonoscopy showed no abnormalities. A diagnosis of recurrent polymyalgia rheumatica was made and prednisone was given again at a dosage of 30 mg·day^{-1}. A few days later, the patient felt well. The ESR had dropped to 36 mm in 1 h. Currently, 6 months after the recurrence, the patient remains well, on a dose of <10 mg prednisone·day^{-1}.

Discussion

The patient fulfilled the diagnostic criteria for polymyalgia rheumatica [1, 10, 11]. Persistence of respiratory symptoms and progression of the radiographic infiltrate despite antibiotics prompted further investigations with bronchoscopy, BAL and TBB, and the diagnosis of BOOP was established, based on histological findings of the TBB specimen. Although TBB specimens are limited in size, they may enable the diagnosis of BOOP [12].

Organizing pneumonia is a common, but relatively nonspecific, pattern of lung repair that can be seen in a number of clinical settings [8, 13, 14]. Organizing pneumonia has been observed in association with several connective tissue diseases such as rheumatoid arthritis, systemic sclerosis, polymyositis/dermatomyositis, systemic lupus erythematosus, Sjögren′s syndrome and inflammatory bowel disease [13–17]. Regarding the association of polymyalgia rheumatica with BOOP, one single case has previously been reported [9]. Exposure to drugs [18], variegated infections [19] and exposure to toxic fumes [20] have also been implicated.

In other instances, no cause is found, and the disease is deemed cryptogenic [15, 21–23]. The term cryptogenic organizing pneumonia (COP) is used synonymously with idiopathic BOOP, as originally proposed by Epler *et al.* [15] in 1985. The histological features of BOOP are inflammation and fibrosis within the distal airways and alveoli [7, 8]. As BOOP can be observed in the vicinity or at the periphery of many lung processes, such as infections, aspiration/inhalation pneumonia, or close to a tumour, and also because BOOP mostly demonstrates a patchy distribution, a TBB may not always provide adequate information and an open-lung biopsy is sometimes required to rule out BOOP as a secondary process. BAL, is necessary to reasonably exclude infections [13, 24], and, as was the case in the present patient, lymphocytes are predominantly found in the BAL in BOOP [25].

The diagnosis of BOOP has to be made according to the whole clinical picture. A flu-like syndrome, a persistent and nonproductive cough and dyspnoea on exertion are the most common respiratory symptoms, along with malaise, fever and weight loss. The course is usually subacute, with symptoms over several weeks or even months [13, 14, 24]. Although multiple bilateral alveolar patchy opacities are the most characteristic radiographic manifestations of cryptogenic or secondary organizing pneumonia [13, 14, 16], focal opacities, nodules, cavities and unilateral opacities

have been reported, although less frequently [14, 26]. The present patient developed a unilateral lung infiltrate. In a recent series of patients with BOOP, no major differences were found between the chest radiographic findings whether or not a cause was identified [14].

As the first manifestation heralding the onset of a systemic disease, BOOP complex has been reported in association with systemic lupus erythematosus, dermatopolymyositis, the anti-JO1 syndrome and inflammatory bowel disease [17, 27–31]. In the authors′ view, this observation is of great interest to pulmonologists, and any form of BOOP should be followed up closely, in light of the possible development of an underlying cause. According to previous case reports and the present case, organizing pneumonia may be associated with and initiate the clinical course of polymyalgia rheumatica.

Organizing pneumonia is usually treated with corticosteroids and the response is often dramatic. However, the optimum dosage regimen and duration of treatment are not yet firmly established [13, 15, 32]. In the present case the symptoms of polymyalgia rheumatica and the pulmonary infiltrate showed rapid improvement upon corticosteroid treatment. Relapses of polymyalgia rheumatica are more likely to develop during the initial 18 months of treatment and within 1 yr after withdrawal of steroids [1, 11], as was the case in this patient. A poor prognosis of BOOP has been observed in a subgroup of patients with connective tissue disease [33], in whom closer monitoring seems warranted.

In conclusion, this report suggests that bronchiolitis obliterans organizing pneumonia may be associated with polymyalgia rheumatica, and may even be the first manifestation of this connective tissue disorder.

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