Respiratory Medicine Case Reports 20 (2017) 150–153

Contents lists available at ScienceDirect

Respiratory Medicine Case Reports

journal homepage: www.elsevier.com/locate/rmcr

Case report

A case of mixed dust pneumoconiosis with desquamative interstitial pneumonia-like reaction in an aluminum welder

Yuki Iijima [a], Masashi Bando [a,*], Hideaki Yamasawa [a], Hiroshi Moriyama [b], Tamiko Takemura [c], Toshiro Niki [d], Yukihiko Sugiyama [a]

[a] Division of Pulmonary Medicine, Department of Medicine, Jichi Medical University, 3311-1, Yakushiji, Shimotsuke, Tochigi, Japan
[b] Division of Respiratory Medicine, Department of Homeostatic Regulation and Development, Niigata University Graduate School of Medical and Dental Sciences, Niigata, Japan
[c] Department of Pathology, Japanese Red Cross Medical Center, Tokyo, Japan
[d] Department of Pathology, Jichi Medical University School of Medicine, Tochigi, Japan

ARTICLE INFO

Article history:
Received 16 July 2016
Received in revised form
15 January 2017
Accepted 3 February 2017

Keywords:
Desquamative interstitial pneumonia
Aluminum lung
Metal analysis
Pneumoconiosis

ABSTRACT

A 60-year-old man presented with an 18-month history of gradually worsening cough and a 12-month history of dyspnea on exertion. High-resolution computed tomography showed bilateral uniform ground grass opacity in the lower lung fields, partially resolved by smoking cessation. A tentative diagnosis of desquamative interstitial pneumonia (DIP) was made. Video-assisted thoracic surgery was performed and pathological analysis showed peribronchiolar fibrosis with intra-alveolar macrophage infiltration. Elemental analysis detected aluminum and iron in the upper lobe and only iron in the lower lobe. Thus, a definitive diagnosis of mixed dust pneumoconiosis with DIP-like reaction was made. DIP-like reaction is known to be a reactive change caused by exposure to tobacco smoke as well as by inhalation of inorganic particles. Obtaining a detailed medical history including occupational and environmental risk factors is important to distinguish cases of DIP-like reaction due to exposure to inorganic particles from the usual cases related to smoking, and thus provide suitable treatment.

1. Introduction

Desquamative interstitial pneumonia (DIP), a condition associated with exposure to tobacco smoke, is one of the major idiopathic interstitial pneumonias. Characteristic signs include bilateral ground glass opacity with a predilection for the lower lung zone and peripheral predominance on chest radiography, and intra-alveolar accumulation of macrophages pathologically [1]. Bedrossian et al. proposed the term “DIP-like reaction” to describe the accumulation of macrophages in the alveoli surrounding various lesions, such as rheumatoid nodule, eosinophilic granuloma, intrapulmonary lymph node, and chondromatous hamartoma [2]. Also, some cases of aluminum lung, welder's lung, or asbestosis show pathological features of DIP [3–9].

In this report, we describe a case of pneumoconiosis in an aluminum welder with radiological findings suggestive of DIP and a pathological diagnosis of interstitial pneumonia mainly dominated by a DIP-like reaction.

2. Case report

A 60-year-old Japanese man presented to our hospital with a 12-month history of dyspnea on exertion. He also had a cough that had gradually worsened over the past 18 months. A routine medical check-up had detected an abnormal shadow on chest X-ray, but no treatment was instituted and he was only observed. He had a past medical history of diabetes mellitus and hypertension and a history of heavy smoking (60 pack-years). He worked in aluminum processing, involving casting aluminum into molds for engine covers and polishing the workpieces. His work also sometimes involved polishing steel.

On examination, his vital signs were normal, with peripheral oxygen saturation of 95%, respiratory rate of 18 breaths per minute, and temperature of 36.7 °C. There was finger clubbing with fine crackles at the lung bases on auscultation. C-reactive protein was elevated to 2.02 mg/dl, and Krebs von den lungen-6 and surfactant

* Corresponding author.
E-mail address: bando034@jichi.ac.jp (M. Bando).

http://dx.doi.org/10.1016/j.rmcr.2017.02.002

Abbreviations

HRCT	high-resolution computed tomography
DIP	desquamative interstitial pneumonia
VATS	video-assisted thoracic surgery
GGO	ground grass opacity
f-NSIP	fibrotic nonspecific interstitial pneumonia

protein D were elevated to 1996 U/ml and 160 ng/ml, respectively. Antibodies associated with collagen vascular disease had low titers. Chest X-ray showed ground glass opacity (GGO) in both lower lung fields. High-resolution CT (HRCT) showed emphysematous change and mild GGO in the upper lobes (Fig. 1A), and uniform GGO in the lower lobes (Fig. 1B).

We suspected the possibility of DIP and recommended smoking cessation, following which the GGO at the lower lobes regressed to some extent, though not completely (Fig. 1C and D).

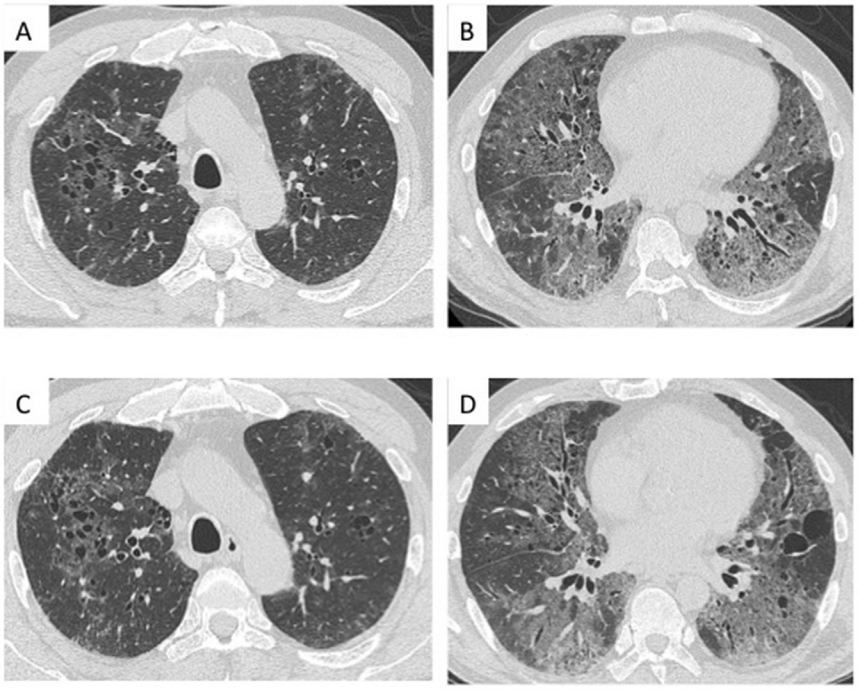

Fig. 1. HRCT scans of the chest. (A, B) At initial presentation: Emphysema and mild GGO in the upper lobes, and uniform GGO with lower zone predominance. (C, D) After smoking cessation: Little change is evident in the upper lobes, while bilateral shadows in the lower lobes show mild improvement.

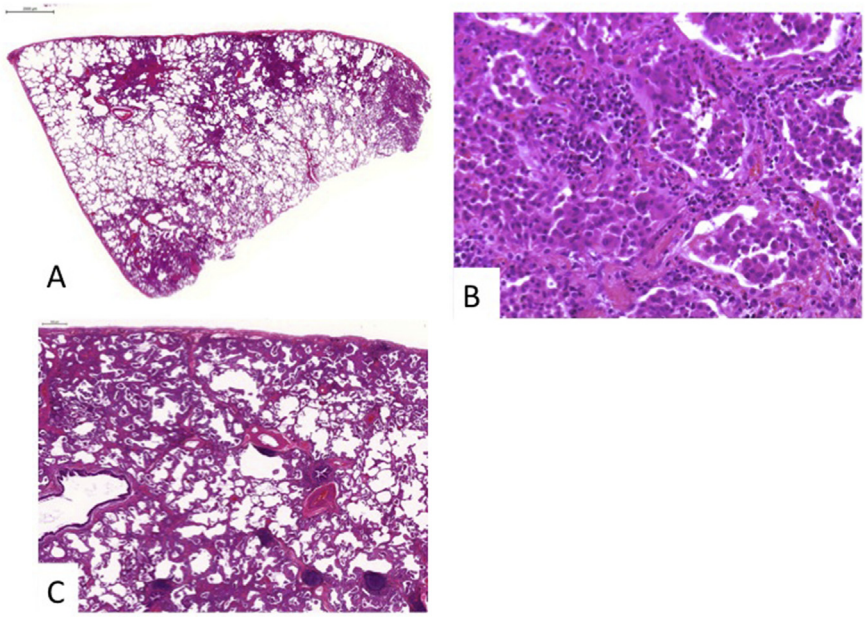

Fig. 2. Pathological findings from VATS lung biopsy. (A) Right. S2: Panoramic view showing bronchiolocentric accentuation of macrophage accumulation and peribronchiolar fibrosis. (hematoxylin-eosin, × 1), (B) Right. S2: Large macrophages admixed with eosinophils in the alveolar lumina and infiltration of plasma cells in the alveolar walls. (hematoxylin-eosin, ×20), (C) Right. S8: Fibrotic NSIP with mild accumulation of macrophages in the alveolar lumina and lymphoid follicles. (hematoxylin-eosin, ×3).