Received: 19 November 2023 | Revised: 21 December 2023 | Accepted: 28 December 2023

DOI: 10.1002/ccr3.8415

Clinical Case Reports Open Access WILEY

CASE IMAGE

Aggressive progressive pleuroparenchymal fibroelastosis developed long after allogenic hematopoietic stem cell transplantation

Osamu Imataki | **Makiko Uemura**

Division of Hematology, Department of Internal Medicine, Faculty of Medicine, Kagawa University, Takamatsu, Japan

Correspondence
Osamu Imataki, Division of Hematology, Department of Internal Medicine, Faculty of Medicine, Kagawa University, 1750–1 Ikenobe, Miki-town, Kita-county, Takamatsu, Kagawa 761-0793, Japan.
Email: oima@med.kagawa-u.ac.jp and imataki.osamu@kagawa-u.ac.jp

Funding information
Japan Society for the Promotion of Science, Grant/Award Number: JP 22K06768 and JP23K11850

Key Clinical Message

The typical pleuroparenchymal fibroelastosis (PPFE) after hematopoietic stem cell transplantation (HSCT) is characterized by late-onset progressive pulmonary complication within 5 years. PPFE shows a poor prognosis without definitive standard care other than lung transplantation. Our case indicated an over 20 years late-onset and aggressively exacerbating PPFE.

KEYWORDS

hematopoietic stem cell transplantation (HSCT), late-onset noninfectious pulmonary complication (LONIPC), pleuroparenchymal fibroelastosis (PPFE)

We treated a 35-year-old man with acute lymphoblastic leukemia/lymphoma primary disease on a mediastinal mass. At 36 years of age, he underwent peripheral blood stem cell transplantation (PBSCT) from an HLA full matched related sibling donor with a conditioning regimen of total body irradiation (12 Gy) and cyclophosphamide (120 mg/kg). Acute and chronic graft-versus-host disease developed; however, the patient's lung was unharmed. Seven years after the transplantation, an opportunistic onset of late-onset noninfectious pulmonary complication (LONIPC) developed on his right upper lobe with a scant paucity appearance (Figure 1A). LONIPC was cured after responding well to prednisolone therapy. The patient was then cleared from his clinical outpatient status as a PBSCT recipient 12 years later. One year after his last visit to our transplantation outpatient clinic, he was transferred to our hospital with respiratory failure. The imaging diagnosis revealed typical pleuroparenchymal fibroelastosis (PPFE), which had been rapidly progressing over several months (Figure 1B). The patient's condition deteriorated and had poor lung function and severe respiratory failure, necessitating home oxygen therapy. He died of respiratory failure 3 months after the onset of PPFE (Figure 1C).

PPFE has a progressive clinical course with a poor prognosis, and no definitive therapeutic options other than lung transplantation have been established.[1] The typical clinical course of PPFE after transplantation is characterized by LONIPC that occurs several years after transplantation, usually within 5 years. The mechanism of PPFE has not been fully understood; however, previous reports indicated that multiple factors, including drugs, radiation, infection, and cell-mediated immune reactions, were associated with PPFE onset. In the

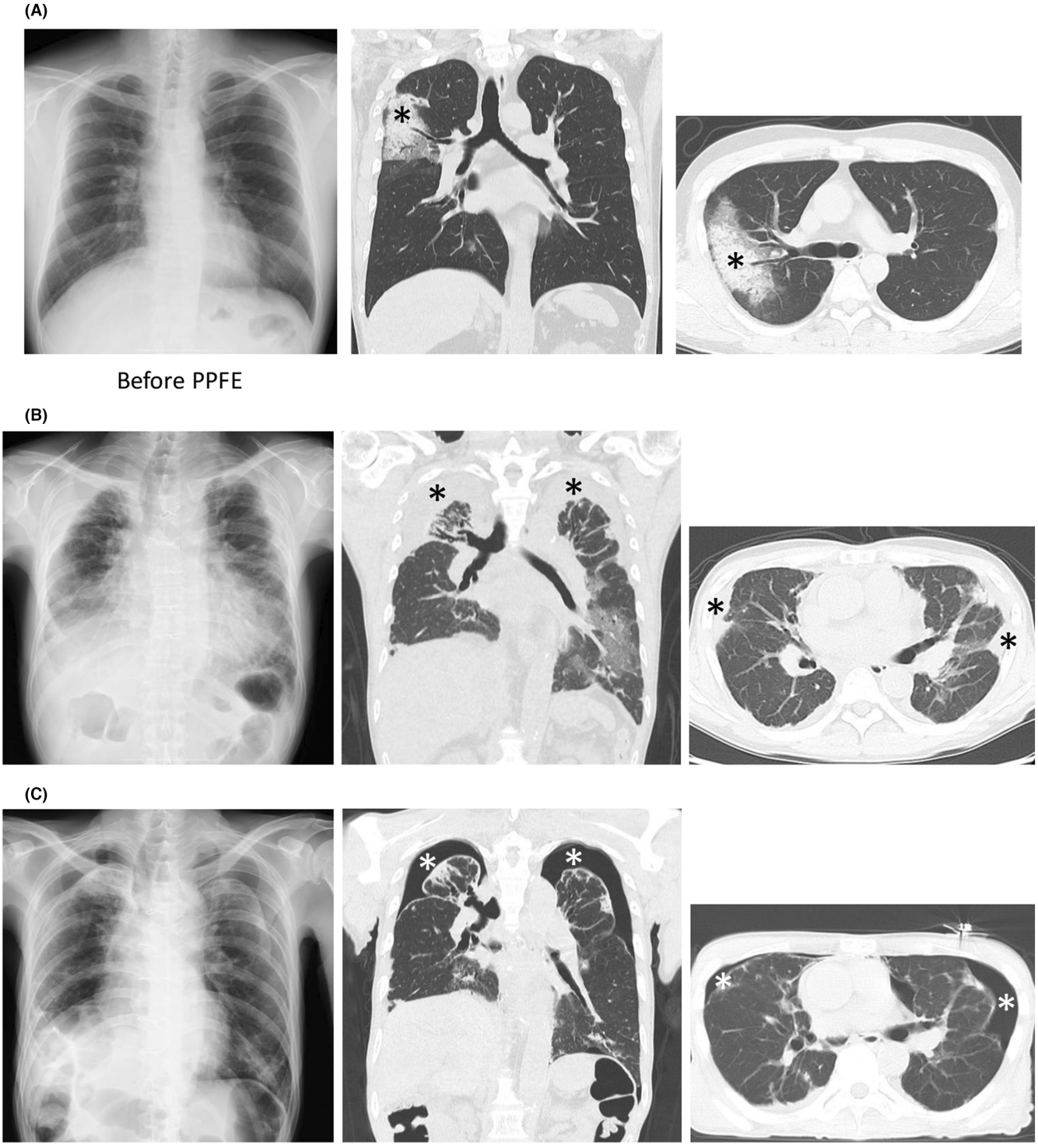

FIGURE 1 Patient pulmonary imaging. (A) Chest x-ray and CT before pleuroparenchymal fibroelastosis (PPFE). Seven years after hematopoietic stem cell transplantation, the patient's pulmonary lesion onset was a grand glass opacity on his right upper lobe (*indicated with asterisk in the center and right panel), which was not revealed on chest x-ray (left panel). We treated the patient with corticosteroid therapy and the patient responded favorably. (B) Chest x-ray and CT findings of the PPFE. The center and right columns represent the CT image of the patient in the coronal and cross-sectional sections, respectively. CT revealed significant bilateral apical pleural thickening and severe volume reduction of the bilateral apex (*indicated with black asterisk in the center and right panel). It was also discovered that architectural distortion caused traction bronchiectasis and peripheral consolidation. (C) Chest x-ray and CT findings of PPFE after the treatment of pulmonary congestion. The center and right columns represent the CT image of the patient in the coronal and cross-sectional sections, respectively. The patient had complicated pulmonary cardiac failure with massive pleural effusion around the bilateral pleura (left top and bottom panels). Following modest treatment of congestion, pneumothoraxes became clear in the bilateral lung (*indicated with white asterisk in the center and right panel).

present case, PPFE emerged more than 20 years after transplantation, and the clinical course was aggressive. We experienced a late-onset and aggressively exacerbating PPFE, which had an atypical onset more than 20 years after transplantation. This case suggested performing an annual health check for vital organs to maintain health and prevent extremely late complications, even long after transplantation.

AUTHOR CONTRIBUTIONS

Osamu Imataki: Conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; supervision; validation; visualization; writing – original draft; writing – review and editing. **Makiko Uemura:** Conceptualization; data curation; investigation; methodology; project administration; resources; supervision; validation.

FUNDING INFORMATION

This work was supported by internal funding, JSPS KAKENHI Grant Numbers JP 22K06768 and JP23K11850. We do not have any other financial relationships to disclose.

CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to disclose.

DATA AVAILABILITY STATEMENT

All data generated or analyzed during this study are included in this published article. Data available on request due to privacy/ethical restrictions.

CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

ETHICAL APPROVAL

We obtained approval from the Kagawa University Hospital Institutional Review Board (H23-023).

This research was conducted ethically in accordance with the World Medical Association Declaration of Helsinki. The subject have given their written informed consent to publish their case (including publication of images).

ORCID

Osamu Imataki https://orcid.org/0000-0001-5332-1316

REFERENCE

1. Travis WD, Costabel U, Hansell DM, et al. ATS/ERS Committee on idiopathic interstitial pneumonias. An official American Thoracic Society/European Respiratory Society statement: update of the international multidisciplinary classification of the idiopathic interstitial pneumonias. *Am J Respir Crit Care Med*. 2013;188:733-748.

How to cite this article: Imataki O, Uemura M. Aggressive progressive pleuroparenchymal fibroelastosis developed long after allogenic hematopoietic stem cell transplantation. *Clin Case Rep*. 2024;12:e8415. doi:10.1002/ccr3.8415