

¹¹¹In-chloride uptake in pulmonary aspergillosis

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Unusual pulmonary uptake of ¹¹¹In-chloride (¹¹¹InCl₃) was recognized in a patient with aplastic anemia. A chest radiograph showed infiltrative shadow concordant with ¹¹¹InCl₃ uptake, and autopsy revealed pulmonary aspergillosis. To our knowledge, there is not an extensive literature on ¹¹¹InCl₃ uptake in pulmonary aspergillosis.

Key words: ¹¹¹In-chloride, lung, aspergillosis, aplastic anemia

INTRODUCTION

¹¹¹IN-CHLORIDE (¹¹¹InCl₃) has been applied for scintigraphic examination of the bone marrow.¹⁻³ We report an aplastic anemia case in which unusual pulmonary uptake of ¹¹¹InCl₃ was recognized during bone marrow scintigraphy.

CASE REPORT

A 63-year-old male was found to have a "low blood count" at a hospital which the patient visited because of high fever, exertional dyspnea and purpura of the lower extremities. He was referred to our hospital for further evaluation. On admission, hematological values were as follows: erythrocyte count 196×10^4 , leukocyte count 1,700 with 3% segmented neutrophils and 97% lymphocytes, thrombocyte count 5.2×10^4 . Myelogram showed 13,100 nucleated cells with 5.2% erythroid series and 92.5% lymphocytes. Chest radiograph showed no significant abnormalities. Therapeutic trials of steroids, granulocyte colony-stimulating factor and antibiotics did not result in favorable response. Bone marrow scintigraphy performed 48 hours after intravenous injection of 74 MBq of ¹¹¹InCl₃ showed marked decreased bone marrow uptake and abnormal pulmonary uptake (Fig. 1). Chest radio-

graph disclosed an infiltrative shadow concordant with ¹¹¹InCl₃ uptake (Fig. 2).

The patient died 8 days after ¹¹¹InCl₃ scintigraphy due to respiratory failure. Autopsy revealed panmyelophthisis and pulmonary aspergillosis (Fig. 3). No extramedullary hematopoiesis was recognized in the lungs.

DISCUSSION

During studies of ¹¹¹InCl₃ as a tumor seeking agent, visualization of red marrow-containing bones was recognized.⁴ Thereafter, ¹¹¹InCl₃ has been applied as a useful bone marrow seeking agent.¹⁻³ Except for lung tumors, pulmonary uptake of ¹¹¹InCl₃ has been reported in a case with idiopathic myelofibrosis⁵ and in a case with liver cirrhosis.⁶ In these cases, autopsy has revealed extramedullary hematopoiesis in the lungs, thereby supporting the usefulness of ¹¹¹InCl₃ for bone marrow imaging. In addition, after intravenous injection of ¹¹¹InCl₃, ¹¹¹In binds to transferrin to form ¹¹¹In-transferrin. And since ¹¹¹In-transferrin is a stable blood-pool imaging agent, increased pulmonary uptake of ¹¹¹InCl₃ has been shown by dynamic scintigraphy in a canine model with pulmonary edema.⁷

In the present case, autopsy revealed that infiltration of neutrophils or macrophages was not remarkable, but aspergillosis was invasive and associated with extensive anemic infarction of the lungs. The increase in vanule or capillary permeability of the lesion may contribute to ¹¹¹InCl₃ uptake, but the precise uptake mechanism was uncertain.

In conclusion, unusual pulmonary uptake of ¹¹¹InCl₃ due to pulmonary aspergillosis was recognized in a

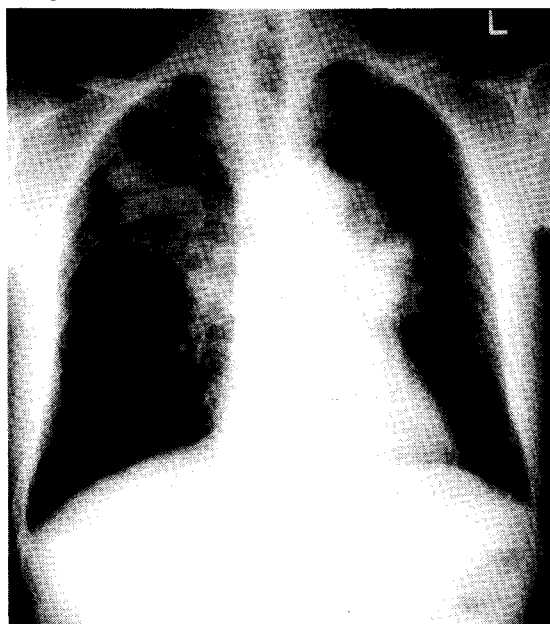
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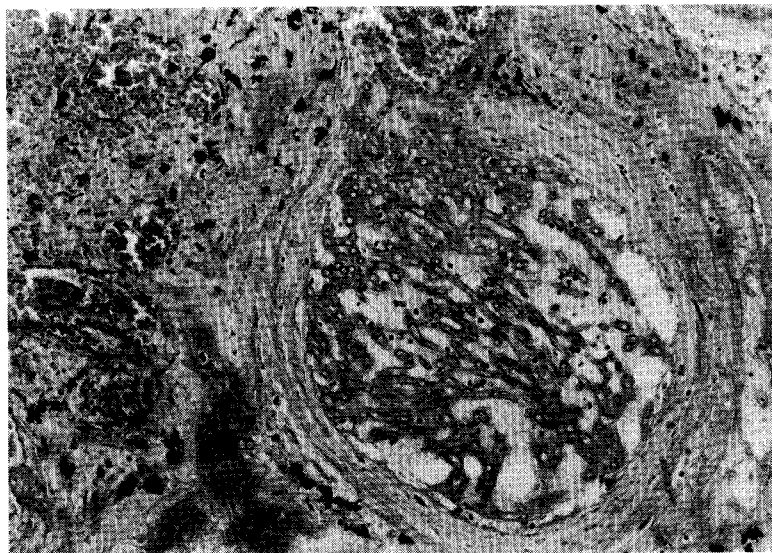


Fig. 1 $^{111}\text{InCl}_3$ scintigraphy showed marked decreased bone marrow uptake and abnormal pulmonary uptake.

▼ **Fig. 2** Chest radiograph showed infiltrative shadow concordant with $^{111}\text{InCl}_3$ uptake.



A



B

▲ **Fig. 3** Autopsy revealed pulmonary aspergillosis (A: Gross appearance of the lung, B: H & E stain).

patient with aplastic anemia. This case suggested the need to consider pulmonary aspergillosis in the differential diagnosis of pulmonary $^{111}\text{InCl}_3$ uptake.

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