

LETTER TO THE EDITOR

Measles Pneumonia: Instructive Images by Chest Computed Tomography



Measles is a highly contagious disease with a public health impact among people displaced after natural disasters (e.g., the 2011 Great East Japan Earthquake), and it is necessary to strictly monitor its onset.¹ In India, transmission of measles following a tsunami was observed during 2004–2005. Measles virus infects the respiratory tracts of nearly all affected persons.² Infectivity is highest within 3 days prior to rash onset, and 75–90% of susceptible household contacts develop the illness. Complications from measles can occur in almost every organ system. Pneumonia is the most common severe complication of measles and accounts for most measles-associated deaths. This pneumonia develops in 0–8% of cases during outbreaks and in 49–57% of adults. Complication rates are increased by immune deficiency disorders, malnutrition, vitamin A

deficiency, intense exposures to measles, and lack of measles vaccination. We report a case of an HIV-infected patient having measles pneumonia with respiratory distress, whose chest computed tomography (CT) images were characteristic and instructive.

A 27-year-old HIV male patient presented himself with a 3-day history of fever (38–40°C) in spring of 2002. He had received anti-retroviral therapy (zidovudine/zalcitabin/nelfinavir, 300/2.25/2250 mg/day) and possessed a high CD4 cell count (519 cells/mm³). He had no previous history of measles and immunization during his childhood. On admission (the 4th illness day), physical examination revealed maculopapular erythema on the face and neck, Koplik's spots on the buccal mucosa, cervical lymphadenopathy, and conjunctivitis with normal respiratory condition

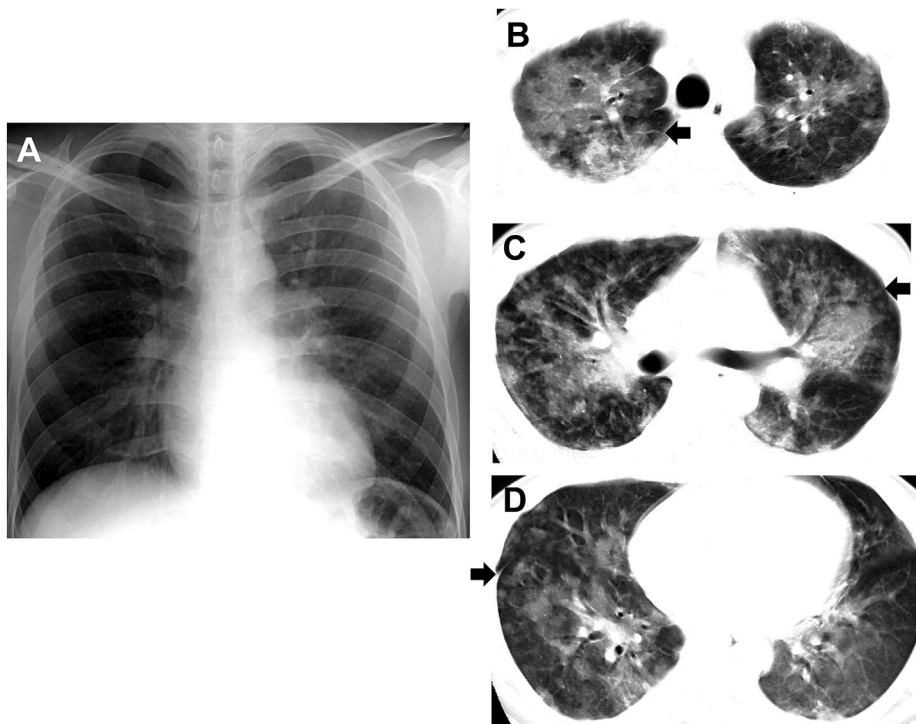


Figure 1 Chest images by computed tomography on the 11th day showed bilateral abnormal findings: (B) interlobular septal thickening (apical section; arrow); (C) bronchial wall thickness, and multiple large and small nodules (bifurcation section; arrow); and (D) fissure thickening (basal section; arrow) as well as diffuse ground glass opacity.

Conflicts of interest: The authors have no conflicts of interest to declare in relation to this article.

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[percutaneous oxygen saturation (SpO₂) on room air, 96%], suggesting the possibility of measles. The rash spread to his whole body and then faded gradually from the 9th illness day. On the 10th day, the patient developed dyspnea (SpO₂ on room air, 88%) and nonproductive cough with continued fever. Chest CT images obtained on the 11th day indicated bilateral abnormal findings, including interlobular septal thickening (apical section; Figure 1B, arrow), bronchial wall thickness, multiple large and small nodules (bifurcation section; Figure 1C, arrow), fissure thickening (basal section; Figure 1D, arrow), as well as diffuse ground glass opacity, whereas chest radiography on the 8th day showed ground glass opacity in the left lung field (Figure 1A). Reverse transcription-polymerase chain reaction assay using blood on admission detected measles RNA; antimeasles antibody [immunoglobulin M (IgM) by enzyme immunoassay] on the 12th day revealed seroconversion, but no IgM and IgG were detected on admission. Definitive diagnosis of measles-associated pneumonia was based on three findings: (1) physical examination findings; (2) results of microorganism tests; and (3) typical findings of CT images.

The patient was started on treatment with steroid and oxygen supplementation (4 L/minute): methylprednisolone (125 mg/day for 3 days) followed by prednisolone (60 mg/day for 3 days and 30 mg/day for 3 days) was administered intravenously. His respiratory condition was ameliorated gradually, as evident from the improvement in CT findings.

Clinical features, chest radiographs, and CT images were assessed in 11 Japanese adults having serologically proven measles with pneumonia.³ CT seems to be a useful method for detecting measles pneumonia. High-resolution CT images related to pneumonia ($n = 4$) revealed the following characteristic features: bronchial wall thickness, centrilobular nodules in ground glass opacity, and interstitial lesions (interlobular septal thickening, fissure thickening, and pleural effusion).⁴ Subcutaneous and mediastinal emphysema are reported as complications of measles in several countries.^{5–7} Clinicians should consider this disease when a patient

with fever and rash develops respiratory distress. Our CT images related to measles pneumonia appear to be instructive for clinicians.

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