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Case report

CASE REPORT

Respiratory syncytial virus pneumonia in an immunocompetent adult: an important differential diagnosis of COVID-19

K. Tone [1], M. Gochi[1] and K. Kuwano[2]

From the [1]Department of Respiratory Medicine, The Jikei University School of Medicine Kashiwa Hospital, 163-1 Kashiwashita, Kashiwa, Chiba 277-8567, Japan and [2]Division of Respiratory Diseases, Department of Internal Medicine, The Jikei University School of Medicine, 3-19-18 Nishishimbashi, Minato-ku, Tokyo 105-8471, Japan

Address correspondence to K. Tone, Department of Respiratory Medicine, The Jikei University School of Medicine Kashiwa Hospital, 163-1 Kashiwashita, Kashiwa, Chiba 277-8567, Japan. email: tone@jikei.ac.jp

Learning points for clinicians

We present a case of respiratory syncytial virus (RSV) pneumonia in a 36-year-old immunocompetent young female patient having a contacted history of RSV pneumonia from her daughter. Since the clinical and radiological findings were similar, clinicians should consider this classical disease in differential diagnosis, particularly in the pandemic settings of COVID-19.

A 36-year-old Japanese woman with a history of bronchial asthma visited other hospitals with pyrexia, cough and dyspnea in July 2021. The SARS-CoV-2 PCR test was negative twice. She was first treated with cefditoren pivoxil, then with azithromycin, and subsequently with moxifloxacin for bronchitis because no abnormal findings were observed on her chest X-ray. When those symptoms did not improve, she was referred to our hospital for further examination and treatment. Vital signs were normal except for mild pyrexia (37.8°C). No abnormalities were observed during the physical examination. Blood tests revealed inflammation without a corresponding increase in white blood cell count (peripheral leukocyte count, 4300/μl; neutrophils, 66.8%; basophils, 0.7%; eosinophils, 6.0%; monocytes, 4.9%; lymphocytes, 21.6%; and C-reactive protein, 0.24 mg/dl). There was no evidence of liver or renal dysfunction. Chest computed tomography revealed bilateral pneumonia with patchy ground-glass opacity surrounding bronchus or subpleural lesions, compatible with COVID-19 pneumonia (Figure 1a). However, the SARS-CoV-2 PCR test with a nasopharyngeal swab was negative. In her medical interview, we found that her 2-year-old-daughter had been admitted to our hospital due to respiratory syncytial virus (RSV) pneumonia. The rapid antigen test for RSV was performed and the result was positive. As her oxygen saturation was good and the symptoms were mild, we ordered recuperation at home with symptomatic treatment. Two weeks later, the paired serum titer for RSV antibody (evaluated via complement fixation method) increased significantly from 4 to 64. In differential diagnoses, such as atypical pneumonia due to *Mycoplasma pneumoniae* or *Chlamydia pneumoniae*, these antibodies are not elevated with paired serum. Therefore, we concluded that the patient had RSV pneumonia. The symptoms and radiological findings improved within 1 month. Interestingly, the patchy ground-glass opacities reemerged without symptom exacerbation after 3 months (October 2021) and disappeared spontaneously within a few months, similar to a clinical and

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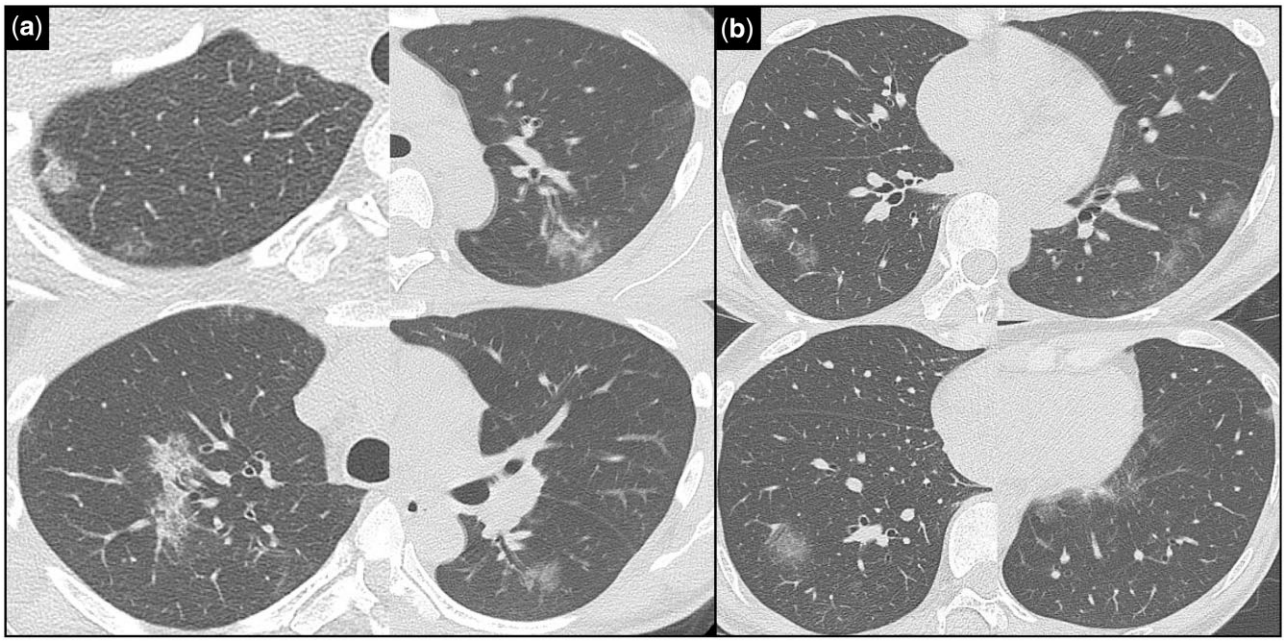

Figure 1. Chest computed tomography showing bilateral patchy ground-glass opacity surrounding bilateral bronchus or subpleural lesions on the first visit (July 2021) (**a**) and the reemerged ground-glass opacity dominantly on bilateral lower lobe subpleural lesions (October 2021) (**b**).

radiological course of COVID-19 (Figure 1b). We believe the abnormal shadow that recently appeared was caused by RSV pneumonia because no other suggestive disease was revealed by the same tests described above.

RSV is a common cause of respiratory infections in children.[1] Although adults can also be infected by the virus, the symptoms typically mimic the common cold, and most patients recover in a week or two. RSV can be fatal in infants (especially premature infants), elderly patients, patients with cardiopulmonary disease or immunocompromised patients.[1] Previously, RSV infections had a seasonality (peak activity is seen in winter in most countries).[2] However, recent reports alert that mitigation measures against COVID-19 may disrupt seasonal patterns of RSV, thereby causing larger or more severe outbreaks.[3] Moreover, the radiological features of RSV pneumonia are bilateral ground-glass opacity, consolidations or nodules with halo, which overlaps with COVID-19 pneumonia.[4,5] Therefore, regardless of the season and from the viewpoint of radiological findings and clinical course, clinicians should not forget that RSV infection is an important differential diagnosis of COVID-19, even in immunocompetent young adults.

Consent for publication: Informed consent for publication was obtained from the patient. Ethics approval was not needed for the single case report.

Conflict of interest: None declared.

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