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Correspondence

Familial cluster of pneumonia and asymptomatic cases of COVID-19 in Taiwan



To the Editor,

The outbreak of the novel coronavirus (SARS-CoV-2) infection from Wuhan, China, since December 2019, has been a public health emergency of international concern as it has spread from China to the world, including Taiwan.^{1,2} Since May 11, 440 cases have been reported in Taiwan. We report the first four-member familial cluster of COVID-19 in Taiwan. The parents had pneumonia (patient A, father and patient B, mother), one son (patient C) had mild cough, and the other son (patient D) was symptomless.

A 53-year-old Taiwanese man (patient A), his wife (patient B, 53 years old), and two sons (patients C and D, 24

and 22 years old) departed from Taiwan on January 22, 2020, transferred at Hong Kong (where they stayed 1 h at the airport), and arrived in Italy on January 23; they returned to Taiwan on February 1. They claim to have no personal contact with anyone from China.

Patient A had tolerable cough and myalgia since January 26. On February 1, he developed fever (38.8 °C) 3 h after arriving in Taiwan. He visited the local clinic and received symptomatic medications. On February 4, he visited our emergency department owing to dyspnea and was admitted. The chest computed tomography (CT) scan on the same day showed diffuse patchy consolidations in both lungs (Fig. 1A). He then received oseltamivir, piperacillin/

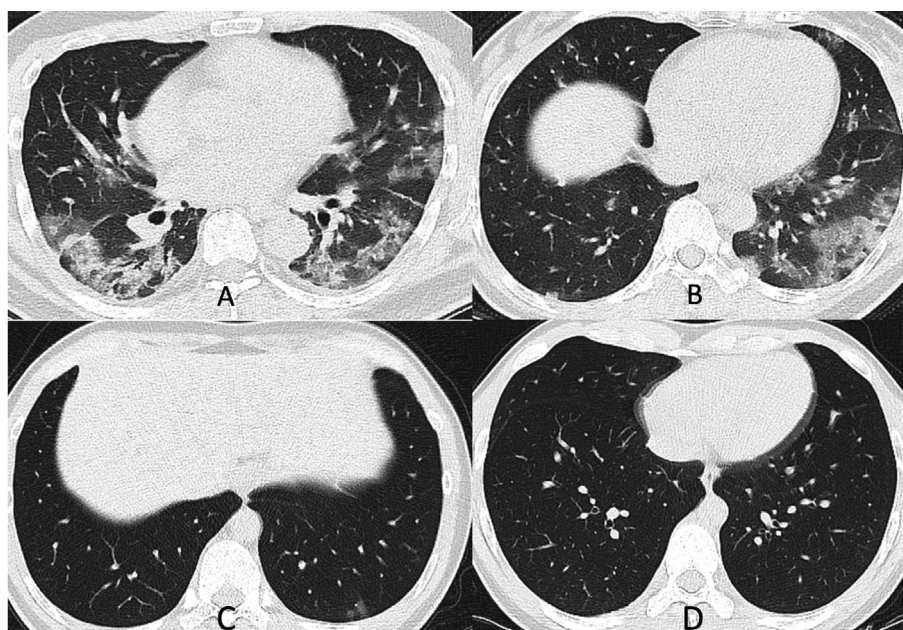


Figure 1 Chest computed tomography scan of the four patients showing multifocal ground-glass changes in the lungs of patients A and B. A relatively normal presentation was seen in patients C, and D.

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tazobactam, and clarithromycin as empirical therapy. Since January 28, patient B (who was previously healthy) began to have cough and was also admitted for pneumonia on February 5 (Fig. 1B); levofloxacin was prescribed as empirical treatment. Their throat swabs were positive for SARS-CoV-2 on real-time reverse-transcription–polymerase-chain-reaction (RT-PCR) assays.³

Patients C and D were both previous healthy. Patient C had a mild cough since January 27 and patient D reported no discomfort. Both patients were afebrile and was quarantined on February 7 and 8, respectively. Both chest CT scans were essentially normal (Fig. 1C and D). However, their throat swabs were positive for SARS-CoV-2.

Assays for influenza, *Mycoplasma pneumoniae*, *Chlamydial pneumoniae* and other bacteria cultures were all negative in all patients. Since February 21, all four patients are positive for COVID19 and hospitalized, and their vital signs were stable.

Since they had neither direct contact with COVID-19 cases, nor recent travel history before this episode, the possible sources of infection were the airport, airplane cabin, or in Italy. Under the strict and coherent policies led by the Center for Disease Control, Taiwan, the control of COVID-19 is effective and to date, no secondary case from this family has been identified. At last, this familial cluster of COVID-19 reminds us that early precaution and protection are important at the initial pandemic stage of a contagious disease.

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Declaration of Competing Interest

The authors have no conflicts of interest relevant to this article.

References

1. Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, et al. A novel coronavirus from patients with pneumonia in China, 2019. *N Engl J Med* 2020 Feb 20;382(8):727–33.
2. Rolling updates on coronavirus disease (COVID-19), 7 May 2020. Geneva: World Health Organization; 2020.
3. Corman VM, Landt O, Kaiser M, Molenkamp R, Meijer A, Chu D KW, et al. Detection of 2019 novel coronavirus (2019-nCoV) by real-time RT-PCR. *Euro surveill* 2020 Jan;25(3):2000045.

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