Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
Case Report
A mild type of childhood Covid-19 - A case report

Xiaoping Yin a,1, Li Dong b,1, Yu Zhang a, Weilin Bian b, Hongjun Li c,*

a Department of Radiology, Affiliated Hospital of Hebei University, Baoding, Hebei 071000, China
b Department of Radiology, Baoding People's Hospital, Baoding, Hebei 071000, China
c Department of Radiology, Beijing You'an Hospital, Capital Medical University, Beijing 100069, China

Received 21 February 2020; accepted 6 March 2020
Available online 27 March 2020

Abstract
This case is about a 9-year-old child diagnosed with COVID-19, with a history of epidemiology; SARS-CoV-2 nucleic acids testing was positive, while chest CT examination was negative. The clinical classification was light. Nonetheless, isolation measures should still be taken to avoid infecting others.

© 2021 Beijing You’an Hospital affiliated to Capital Medical University. Production and hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

Keywords: COVID-19; SARS-CoV-2; Child; CT; Mild

1. Introduction
Since December 2019, there have been a series of unexplained cases of pneumonia in Wuhan, whose clinical manifestations are very similar to those of viral pneumonia. Deep sequencing of the patients' lower respiratory tract samples showed that the source of infection was a new type of coronavirus. On February 11, 2019, the new coronavirus was named severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), according to the international committee for the classification of virus. Meanwhile, world health organization (WHO) decided to name the disease caused by SARS-CoV-2 as Coronavirus disease 2019 (COVID-19). Many studies have reported epidemics in adults and even the old, but attention has rarely been paid to reports on children patients. Here we present a child case with mild symptoms.

2. Case report
A 9-year-old male patient was hospitalized due to having had a fever for three days. The child had no obvious induction of fever three days before this. His temperature was as high as 38.9 °C, and he presented no chill or shivering, cough, sputum or sore throat, chest tightness or chest pain, acid reflux, nausea, abdominal pain or diarrhea, dizziness or headaches, or breathing cyanosis, and no weakness or muscle ache. The patient had lived in Wuhan for a long time. There was also no clear history of exposure to patients infected with SARS-CoV-2. He was in good health and denied a history of food and drug allergies. Routine blood examination in the external hospital showed: leukocyte 13.07 × 10^9/L, erythrocyte 4.25 × 10^12/L, neutrophil ratio 72.71%, lymphocyte ratio 16.12%, absolute value of lymphocyte 2.1 × 10^9/L, influenza A and B pathogen detection were negative. A chest X-ray did not find any obvious abnormality in either lung. The patient was given "oral administration of cattilan and intravenous drip of lysine acetylsalicylate injection" for one day (the specific dosage is unknown), and no fever occurred. The child was sent to hospital by his parents for further diagnosis and treatment. Because the child had lived in Wuhan two weeks before the onset of the disease and had a fever, SARS-CoV-2 infection...
was not excluded. During patient admission examination: T 36.6 °C, P 100 times/min, R 20 times/min, BP 100/65 mmHg, no congestion in the pharynx, no swelling of the tonsils, clear breath sounds in either lung, and no obvious dry and wet rales were recorded. Routine blood examination after admission was conducted with the following results: white blood cell 4.22 × 10^9/L, red blood cell 3.80 × 10^12/L, hemoglobin 118.00 g/L, platelet 363.00 × 10^9/L, neutrophil percentage 37.40%, lymphocyte percentage 53.80%. Novel coronavirus nucleic acids testing was positive. Results for biochemical examination are: lactate dehydrogenase 69U/L↑, α-hydroxybutyrate dehydrogenase 258U/L↑, creatine kinase 139U/L, creatine kinase isoenzyme 41U/L, C- reactive protein 15.2 mg/L↑, serum amyloid >300 mg/L↑, procalcitonin 0.28 ng/ml (see Figs. 1–3).

3. Discussion

In December 2019, unexplained cases of pneumonia appeared in Wuhan. On 11 February 2019 the world health organization (WHO) decided to name the disease caused by the novel coronavirus as COVID-19. COVID-19 is a disease...
caused by SARS-CoV-2, which mainly causes pulmonary inflammatory lesions, and can also cause damage and corresponding symptoms of intestinal tract, liver and the nervous system. The virus spreads through droplets and contact. The chief clinical manifestations are fever and low fever, and it can also be manifested as fatigue, dry cough, dyspnea, etc. Acute respiratory distress syndrome (ARDS) can occur in severe cases. Clinical manifestations in patients are divided into mild, ordinary, severe and critical conditions [1]. Laboratory tests showed that white blood cells were normal or decreased and lymphocytes decreased. The diagnosis is based on viral nucleic acid detection and gene sequencing, but nucleic acid detection has strong specificity and poor sensitivity.

COVID-19 has a strong transmission and high concealment, and its chest imaging findings are characteristic. Some patients have imaging findings earlier than clinical manifestations. The stages of imaging manifestations include early, advanced, and severe [2]. There are few existing reports of children, and only one case report of adults [3]. Children and teenagers infected with SARS-CoV-2 have mild clinical symptoms and radiological manifestations, and are rarely severe or critical [4]. Mild-stage patients have mild clinical symptoms and no pneumonia on imaging [1]. Thin-slide chest CT can be non-invasive and more sensitive to nucleic acids and clinical manifestations. In order to avoid missed diagnosis of the progress in this child, a chest CT examination was performed on the third and fifth days of admission. No positive signs were found, which can provide high indication for clinical judgment of good prognosis. The child's nucleic acid turned negative eight days after admission and he was then discharged.

Based on the clinical and imaging data of this case, the following guidelines are recommended. If children and adolescents have a history of living or traveling in epidemic areas within one to two weeks, or they have had contact with confirmed or suspected cases, or stay in an aggregated disease environment, the possibility of their infection with SARS-CoV-2 cannot be ruled out, even when their clinical symptoms are mild and there is no typical chest imaging manifestation. SARS-CoV-2 nucleic acid or gene testing is required for these patients. If these tests are positive, the patient should be placed under immediate quarantine. Patients with negative results from viral nucleic acid testing need to be closely observed or to undergo CT examination of lung changes to reduce and avoid missed diagnosis and misdiagnosis of patients with atypical clinical manifestations and occult symptoms, in order to take timely isolation and prevention measures.

**Ethic statement**

The study was approved by the Ethics Committee of Affiliated Hospital of Hebei University.

**Conflict of interest**

The authors declare no conflict of interest.

**Acknowledgements**

We thank all the patients, investigators, co-investigators, and study teams at each of the participating sites.

**References**

[1] National Health Commission of the People’s Republic of China, National Administration of Traditional Chinese Medicine. Diagnosis and treatment of the Pneumonia Caused by the Novel Coronavirus (2019-nCoV) (Trial) (5th Edition). Chin J Integrated Tradit West Med 2020:1–3. 02-11, http://kns.cnki.net/kcms/detail/11.2787.R.20200208.1034.002.html.

[2] Guan Hanxiong, Xiong Ying, Shen Nanqian, Fan Yanqing, Shao Jianbo, Li Hongjun, et al. Preliminary study on clinical imaging features of 2019 novel coronavirus (2019-nCoV) pneumonia in Wuhan. Radiologic Practice: 2020. https://doi.org/10.13609/j.cnki.1000-0313.2020.02.001.

[3] Lei Junqiang, Li Junfeng, Li Xun, Qi Xiaolong. CT imaging of the 2019 novel coronavirus (2019-nCoV) Pneumonia [published online ahead of print, 2020 Jan 31] Radiology 2020:200236. https://doi.org/10.1148/radiol.2020200236.

[4] Radiology committee on infectious and inflammatory disease, Chinese research hospital association; radiology of infection branch, working and treating committee of HIV/AIDS and STD association; radiology of infection sub-branch, radiology branch, Chinese medical association; committee on radiology of infection, radiologist branch, Chinese medical doctor association; radiology of infectious disease management sub-branch, infectious disease management branch, hospital management association in China; infectious disease group, general radiology equipment committee, China association of medical equipment; beijing imaging diagnosis and treatment technology innovation AllianceGuideline for imaging diagnosis of novel coronavirus (2019-nCoV) infected pneumonia (1st edition 2020). New Med 2020;30(1):22—34.