

IMAGES IN CLINICAL MEDICINE

CHEST IMAGING FEATURES OF COVID-19 PNEUMONIA

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On 18th of April 2020, a 49-year-old woman developed a fever of 38.4°C, with no other symptoms. After taking oral nonsteroidal anti-inflammatory agents for 2 days, the temperature returned to normal. On 20th of April 2020, she complained of persistent dry cough, sore throat, ageusia, anosmia and chest distress. The next day, she presented to the Emergency Department of Arges County Hospital, Pitesti, Romania. She divulged that she had been in close contact with a friend, who had been recently confirmed with the diagnosis of COVID-19. A high-resolution computed tomography (CT) of the chest was performed, that revealed multiple images of patchy ground-glass opacities in bilateral lower lobes (Figure 1).

Given the close contact history and imaging findings, she was admitted as a suspected case of SARS-CoV-2 infection. On admission, physical examination unveiled normal vital signs, with oxygen saturation of 96% while breathing ambient air, lung auscultation normal. The antigen test for influenza was negative. Arterial blood gas analysis pointed out a pO₂ of 103 mmHg, potassium 3.3 mEq/L, calcium 1.09 mmol/L and glucose 113 mg/dL. The blood routine tests revealed: white blood cell count 3.99 10⁹/Liter, red blood cell count 6.41 10¹²/Liter, hemoglobin 13.4 g/dL, hematocrit 40.1%, neutrophils 1.99 10⁹/Liter, lymphocytes 39.9%, D-dimers 0.526 ug/mL, troponin T 7.22 ng/L, ferritin 192 ng/mL, procalcitonin 15 ug/L, creatine kinase-MB 27 U/L, lactic acid dehydrogenase (LDH) 481 U/L, fibrinogen

455 mg/dL, normal liver and renal function, normal prothrombin time. The electrocardiogram was normal. On 22th of April, the lab confirmed that the oropharyngeal swab test of SARS-CoV-2 by qualitative real-time reverse-transcriptase-polymerase-chain-reaction (RT-PCR) assay was positive. After seven days of symptomatic treatment and hydroxychloroquine therapy, the patient's respiratory symptoms significantly improved. The dynamics of high-resolution CT of the chest revealed systematic absorption of lung lesions (Figure 2). After two consecutive (24 hours apart) oropharyngeal swab tests of SARS-CoV-2 RNA negative, the patient was discharged on 30th of April, with the indication for home quarantine for at least 14 days. SARS-CoV-2 RNA by oropharyngeal swab remained negative in the follow-up visit on 13th of May 2020.

Take home messages:

- The accuracy of chest CT in symptomatic patients with COVID-19 is high, but used as a single diagnostic test, CT can not accurately diagnose or exclude coronavirus infection and should not be relied upon as a screening or diagnostic tool for COVID-19 pneumonia¹. Chest CT is rather helpful in evaluating the complications of COVID-19 and is indicated in patients with COVID-19 and worsening respiratory symptoms². The most common imaging findings are of an atypical or organising pneumonia, with bilateral involvement, especially of the lower lobes².

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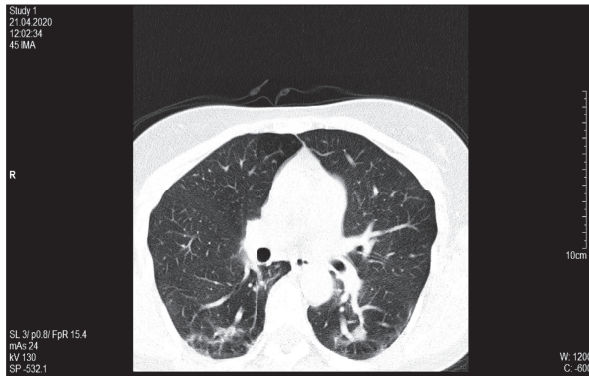


Figure 1. Chest high-resolution CT, showing multiple patchy ground glass opacities in bilateral lower lobes.



Figure 2. Chest high-resolution CT, showing complete regression of white lung patches

- Point of care lung ultrasound may be useful for the diagnosis and can detect abnormalities even in asymptomatic patients.
- The definitive diagnostic test for SARS-CoV-2 infection is the RT-PCR test.

Author contributions:

C.G.N. was responsible for clinical diagnosis and treatment decisions. P.E.M was responsible for the diagnostic procedures and also wrote the manuscript. The authors have read and agreed to the published version of the manuscript.

Compliance with Ethics Requirements:

„The authors declare no conflict of interest regarding this article. The authors declare that all the procedures

and experiments of this study respect the ethical standards in the Helsinki Declaration of 1975, as revised in 2008(5), as well as the national law. Informed consent was obtained from the patient included in the study“.

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