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A Unique Feature of COVID-19 Infection in Chest CT; “Pulmonary Target” Appearance

From:

Ramezan Jafari, Houshyar Maghsoudi, Amin Saburi
From the Department of Radiology, Faculty of medicine, Baqiyatallah University of Medical Sciences, Tehran, Iran (R.J., H.M., A.S.); Chemical Injuries Research Center, Systems Biology and Poisonings Institute, Baqiyatallah University of Medical Sciences, Tehran, Iran (R.J., A.S.).

Dear Editor—The novel Corona virus, COVID-19, which originated in Wuhan, China in December 2019, briefly called COVID-19, has become a pandemic disease. Although pulmonary manifestations predominate, other organs may be involved. The diagnosis is suspected on the clinical and radiologic findings and confirmed with RT-PCR tests. Findings of covid-19 on chest computed tomography (CT) are bilateral peripheral multifocal ground-glass opacities and patchy consolidations, linear opacities, reversed halo, and Crazy-paving (1).

Although these findings are highly suggestive for COVID-19 in clinically suspected cases, they are not specific and as some of the other viral pneumonias like influenza, SARS, and MERS may show similar imaging features (2). Some unusual findings such as parallel pleura sign, paving stone sign (3) and double rings of Saturn (4), and chest target sign (5) have also been reported in CT scans of these patients.

We present a unique imaging feature of pulmonary involvement in four RT-PCR proven COVID-19 cases. A circular

appearance of noninvolved pulmonary parenchyma with a central hyperdense dot surrounded by ground glass or alveolar opacities was found in each of them. Chest CT of four following cases showed bilateral multifocal patchy consolidative opacities, which were nonspecific common suggestive findings for covid-19 infection. The RT-PCT test proved COVID-19 in all cases (Fig. 1 and 2). Interestingly, it revealed some circular appearances of noninvolved pulmonary parenchyma with a central hyperdense dot, which is surrounded by alveolar opacities and caused “Pulmonary target appearance.”

This is a unique and specific appearance that has not been previously reported in other diseases. First, Jafari et al reported similar to this feature named “Ring of Saturn” in July 2020 and then Muller et al in August 2020 also reported alike pattern as chest target sign (4, 5). “Pulmonary target appearance” seems to be unique and specific for COVID-19 pneumonia. The pulmonary target appearance is important from two perspectives: First, this sign has not been reported in other lung diseases as far as we know, and it may be specific to this disease. Second, this appearance is consistent with the pathological findings and possible mechanisms proposed for patients with organizing pneumonia and localized involvement of small vessels (6). It has previously been suggested that viral involvement of a pulmonary lobule can be mediated by the central bronchiole and adjacent vessels through lymphatic and venous drainage (7). Moreover, this feature seems to be a variant of the “halo sign” of organizing pneumonia. We believe this “pulmonary target sign” is a specific finding which can distinguish covid-19 pneumonia from other similar viral pneumonias.

PRIOR PRESENTATIONS

No.

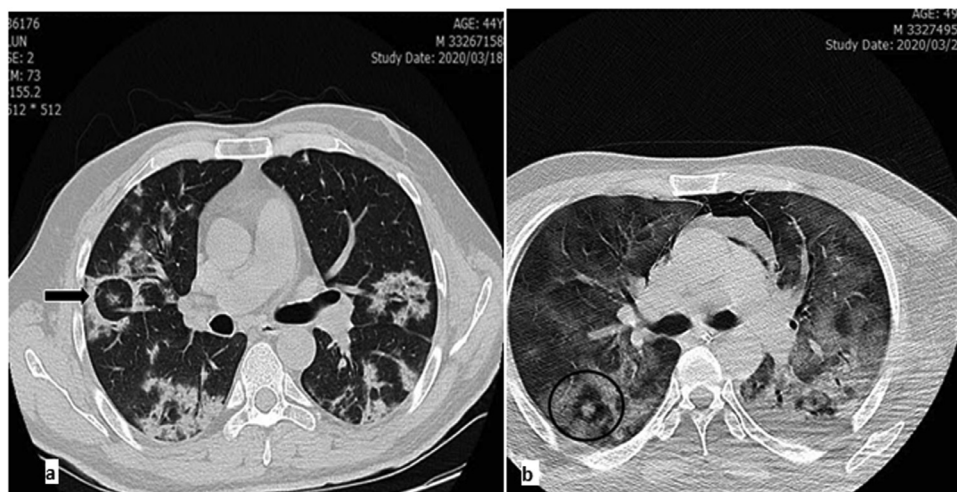


Figure 1. (a, b) Two cases of Pulmonary target sign; (a) axial noncontrast chest CT scan images of a 44-year-old male known case covid-19 pneumonia show the multifocal patchy consolidative opacities on lungs field and multiple complete or incomplete white circles with a central dot or Pulmonary target appearance (black arrows). (b) Axial noncontrast chest CT scan image of a 49-year-old male known as case covid-19 pneumonia show the extensive ground-glass opacities on lungs field with a complete circle with a central dot or Pulmonary target appearance (black circle), also pneumomediastinum is noted.

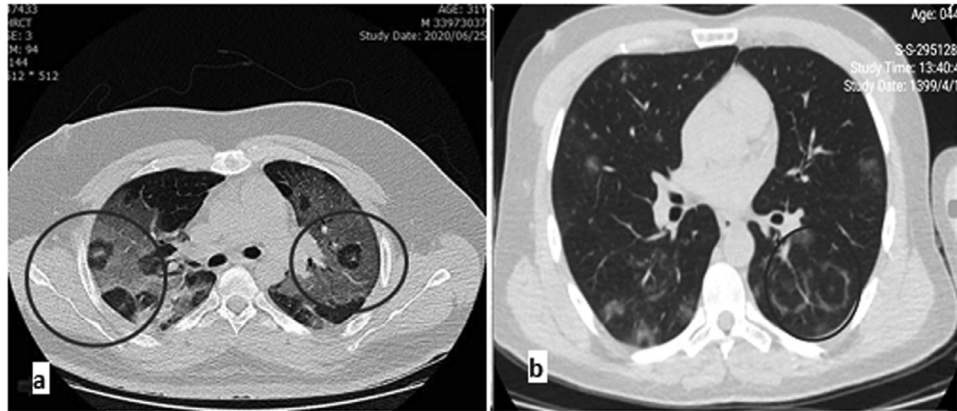


Figure 2. (a, b) Multiple pulmonary target sign in two cases of COVID-19; (a) axial noncontrast chest CT scan image of a 31-year-old male known as case covid-19 pneumonia show the extensive ground-glass opacities on lungs field with multiple complete circles with a central dot or Pulmonary target appearance (*circles*). (b) Axial noncontrast chest CT scan image of a 44-year-old male known as case covid-19 pneumonia show the patchy ground-glass opacities on lungs field with multiple complete or incomplete circles by a central dot or Pulmonary target appearance (*circles*).

AUTHOR CONTRIBUTION

R.J. and H.M. have provided the case and images and A.S. and R.J. have written the article.

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