RADIOGRAPHIC QUIZ From page 12

Overview of the disease

Coronavirus disease (COVID-19) is an infectious disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

The first human cases of COVID-19 were reported by officials in Wuhan, China, in December 2019. The disease rapidly spread throughout the world and was declared a pandemic by the World Health Organization (WHO) on March 12, 2020. On February 27, 2021 there had been 134,076,707 confirmed cases of COVID-19 and 2,512,272 deaths, reported to WHO.

Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness.

A wide spectrum of clinical manifestations can be seen with COVID-19. Fever (80.4%), cough (63.1%), fatigue (46%), and expectoration (41.8%) are the most common manifestations of COVID-19. Other common symptoms include anorexia (38.8%), chest tightness (35.7%), shortness of breath (35%), dyspnea (33.9%), and muscle soreness (33%). Olfactory dysfunction (41.0%) and gustatory dysfunction (38.2%) also appear to be relatively frequent symptoms. Other less frequently reported symptoms include headache (15.4%), pharyngalgia (13.1%), diarrhea (12.9%), shivering (10.9%), nausea and vomiting (10.2%), and abdominal pain (4.4%). The list of potential symptoms for COVID-19 is so long that anything can be considered a symptom. In addition, the list of potential symptoms may expand as we learn more about COVID-19.
The findings of COVID-19 chest imaging were first published in January 2020 and included bilateral lung involvement and ground-glass opacities in the majority of hospitalized patients. Since then, a myriad of articles on chest CT findings in COVID-19 have been published at a rapid pace. The appropriate use of chest CT in patients with COVID-19 should be based on experience and, above all, the scientific evidence that has emerged since the outbreak of this disease, which keeps accumulating.

Chest CT abnormalities with high incidence (>70%) include ground-glass opacities, vascular enlargement, bilateral abnormalities, lower lobe involvement, and posterior predilection

Chest CT abnormalities with intermediate incidence (10% – 70%) include consolidation (51.5%), linear opacity (40.7%), septal thickening and/or reticulation (49.6%), crazy-paving pattern (34.9%), air bronchogram (40.2%), pleural thickening (34.7%), halo sign (34.5%), bronchiectasis (24.2%), nodules (19.8%), bronchial wall thickening (14.3%), and reversed halo sign (11.1%).

Chest CT abnormalities with low incidence (<10%) including include pleural effusion (5.2%), lymphadenopathy (5.1%), tree-in-bud sign (4.1%), central lesion distribution (3.6%), pericardial effusion (2.7%), and cavitating lung lesions (0.7%)
The pulmonary histologic findings of COVID-19, which are characterized by acute and organizing diffuse alveolar damage, resemble those observed in other coronavirus infections, including severe acute respiratory syndrome coronavirus 1 (SARS-CoV-1) and MERS-CoV . Accordingly, the reported chest CT abnormalities in COVID-19 are similar to those seen in infections with SARS-CoV-1 and MERS-CoV . The prevalence of chest CT abnormalities in COVID-19 is dependent on the stage and severity of the disease.

Role of Chest CT in Diagnostic Decision Making
According to the Fleischner Society consensus statement, chest imaging is not indicated as a screening test for COVID-19 in asymptomatic patients or in patients with mild respiratory symptoms of COVID-19 (ie, absence of significant pulmonary dysfunction or damage.
Chest imaging is indicated in patients with moderate to severe respiratory symptoms (ie, presence of significant pulmonary dysfunction or damage) and any pretest probability of COVID-19 infection, when RT-PCR test results are negative, and in any patient for whom an RT-PCR test is not performed or not readily available.

A negative chest CT examination result certainly does not exclude COVID-19. The proportion of false-positive chest CT examination results is substantial and due to overlapping imaging features with numerous other diseases, including other viral pneumonias.

It is important to realize that CT is not the standard for the diagnosis of COVID-19, but its findings help suggest the diagnosis in the appropriate setting. It is crucial to correlate chest CT findings with epidemiologic history, clinical presentation, and RT-PCR test results.

Pulmonary Embolism
Patients with COVID-19 are at risk for developing thromboembolic complications, which may be caused by activation of the coagulation cascade by SARS-CoV-2 or by local or systemic inflammation. Patients with thromboembolic complications have a more than fivefold higher risk of all-cause death. However, at present, there are insufficient data to recommend for or against the routine use of prophylactic thrombolytic therapy or increasing anticoagulant therapy doses in hospitalized patients with COVID-19. The incidence of PE in patients with COVID-19 who underwent CT pulmonary

angiography has been reported to range between 17% and 35%. Prevalence may be highest in critically ill patients, but even patients with milder disease can develop acute PE.

The exact contribution of PE to mortality in patients with COVID-19 is still unknown because not all patients routinely undergo CT pulmonary angiography. In patients with suspected COVID-19 and a high clinical suspicion for PE (eg, determined on the basis of hemoptysis, unexplained tachycardia, or signs and symptoms of deep venous thrombosis and acute deterioration on patient mobilization), CT pulmonary angiography should be considered.

■ REFERENCES:

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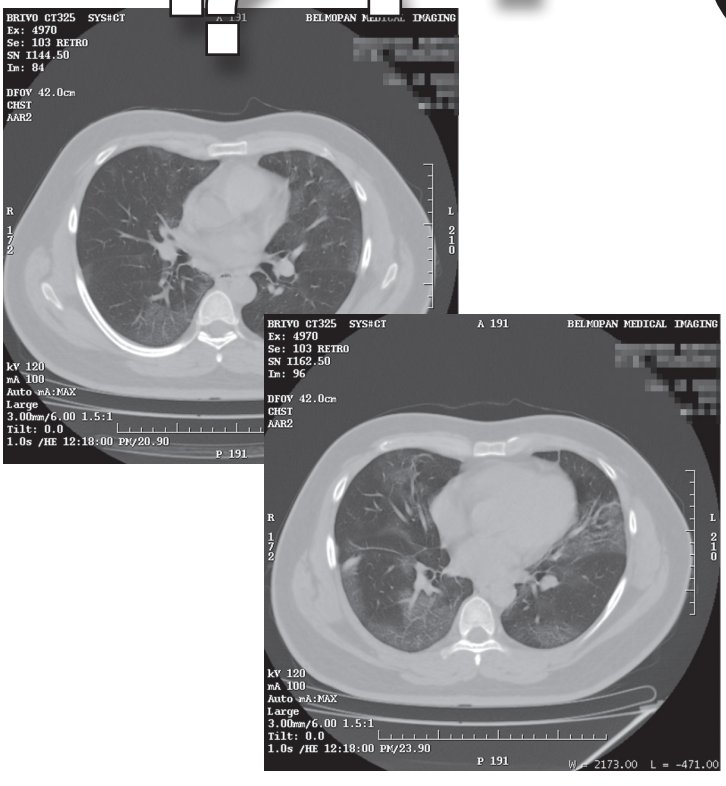
Answer to Radiographic Quiz



Description of the images:

Bilateral areas of ground-glass opacities in a peripheral distribution

1. What is the salient abnormality?

_____*Bilateral segmentary atelectasis*
_____*Pleural effusion*
_____*Cardiomegaly*
__**X**__*Bilateral ground glass opacities*
_____*Pleural thickening*

2. Based on the clinical information and CT images, what is the most likely cause of the pulmonary lesions?

__**X**____COVID-19 pneumonia
_____Alveolar-cell carcinoma
_____Pulmonary fibrosis
_____Pulmonary sarcoidosis