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RESEARCH ARTICLE

HEMATOGENOUS PULMONARY NODULES

Kaoutar Imrani, Tlaite Oubaddi, L. Jroundi and F.Z. Laamrani
Department of Emergency Radiology, Ibn Sina University Hospital, Rabat, Morocco.

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Abstract

Septic pulmonary embolism is an uncommon disorder that is most often seen in patients with predisposing situations (intravenous drug use, endocarditis, septic thrombophlebitis, central venous catheter infections…). The clinical signs are non-specific. CT scan is useful for diagnosis showing bilateral pulmonary nodules with some orienting signs. We report a case of a 43-year-old woman, with a history of hemodialysis via a tunneled jugular catheter, who presented with acute respiratory distress and fever, chest CT showed multiple bilateral nodules, some of which are excavated. Blood cultures showed a staphylococcus aureusbacteremia. The diagnosis of septic emboli was made in view of all the clinical, biological, and radiological elements.

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Introduction:-

Septic pulmonary embolism is a rare and insidious disorder that is difficult to diagnose because of its non-specific clinical and radiological signs. The diagnosis is usually suggested by the presence of a predisposing factor, fever, and the presence on chest CT scan, of multiple pulmonary nodules in the periphery, with or without cavitation [1].

Case Report:

We report a case of a 43-year-old woman, with a history of chronic renal failure of undetermined cause at the stage of hemodialysis via a tunneled jugular venous catheter, presenting with acute dyspnea associated with cough, fever, chills, myalgias, and arthralgias. The clinical examination found a fever of 39°C with polypnea, the peripheral oxygen saturation (SpO2) was 93%. Because of the pandemic context, a covid infection has been suspected in the first place.

Laboratory data showed a high range of white blood cells (17000/mm3) and an elevated C-reactive protein value of 110 mg/l, RT-PCR for SARS-CoV-2 was in progress. A chest CT scan with contrast injection was performed showing multiple bilateral pulmonary nodules of hematogenous distribution, with irregular contours (figure 1a), some of which are excavated (figure 1b, arrowhead), associated with cardiomegaly and pericardial effusion (figure 1c, star).

The clinical and radiological presentation associating an infectious syndrome with pulmonary nodules of hematogenous distribution coming into contact with feeding vessels realizing the "feeding vessel sign", with the notion of cardiomegaly and pericardial effusion allowed to evoke the diagnosis of septic pulmonary emboli on probable infective endocarditis. PCR for SARS-CoV-2 was negative. The blood cultures taken afterward were positive for staphylococcus aureus.

Corresponding Author:- Kaoutar Imrani
Address:- Department of Emergency Radiology, Ibn Sina University Hospital, Rabat, Morocco.

The patient was put on oxygenotherapy and antiobiotherapy adapted to the antibiogram with a good clinical and biological evolution.

Discussion:-

Pulmonary septic emboli are a rare condition with an insidious onset, and present a real diagnostic challenge with non-specific clinical and radiological signs.

The pathogenesis of septic emboli is explained by the presence of an intravascular thrombus, containing microorganisms mobilized from an infectious nidus. This thrombus will undergo fragmentation and migration towards the small pulmonary arteries, causing local ischemia and the release of toxins resulting in a focal abscess [1].

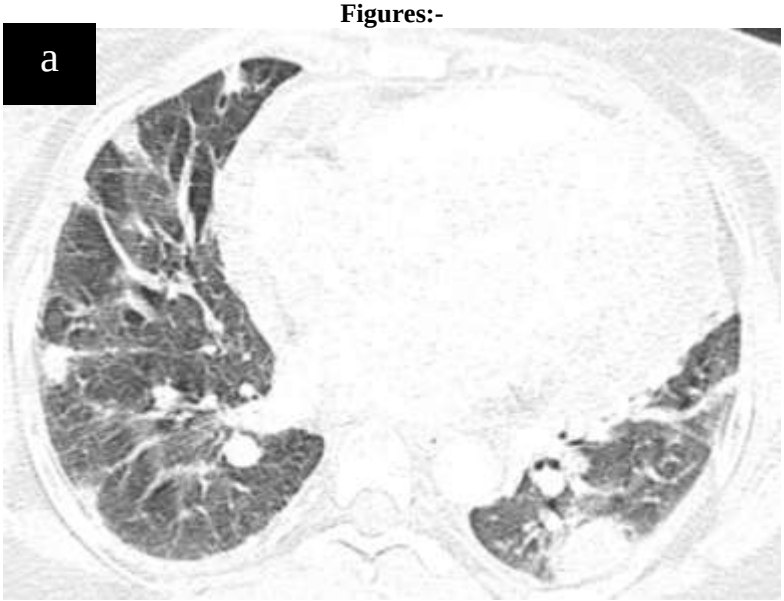
Septic emboli are associated with predisposing situations including intravenous drug use, right heart endocarditis, septic thrombophlebitis, central venous catheter or pacemaker infections, suppurative processes of the head or neck, or periodontal disease. The clinical signs are nonspecific and are summarized by the presence of fever, cough, and/or dyspnea [2].

Chest radiography may show peripheral parenchymal nodules with a tendency to cavitation. The chest CT scan is more specific showing multiple peripheral nodules of variable size from 5 to 35 mm (the difference in size is explained by repeated embolisms), located at the termination of a vessel, realizing the feeding vessel sign[2]. The feeding vessel sign is defined by a distinct vessel within a nodule, very suggestive of septic emboli, which is present in 67-100% of cases but may also be present in pulmonary metastases [3]. This sign leads to two explanations either the vascular origin of the lesion (septic emboli, AVM) or the neoplastic nature (high neoangiogenic activity)[4].

Septic pulmonary emboli may also present as cavitations, pulmonary infarcts in the form of subpleural triangular opacities with mediastinallymphadenopathy[2]. The evolution can be towards pleural extension with the appearance of a pleural effusion or even an empyema, bronchopleural fistula with the risk of pneumothorax[5].

The diagnosis of septic pulmonary emboli should be made in the presence of a predisposing factor, the presence of fever and CT scans consisting of multiple excavated peripheral nodular infiltrates that come into contact with a vessel. Early diagnosis and adequate antibiotic therapy are the main determinants of the evolution of this condition.

Figures:-



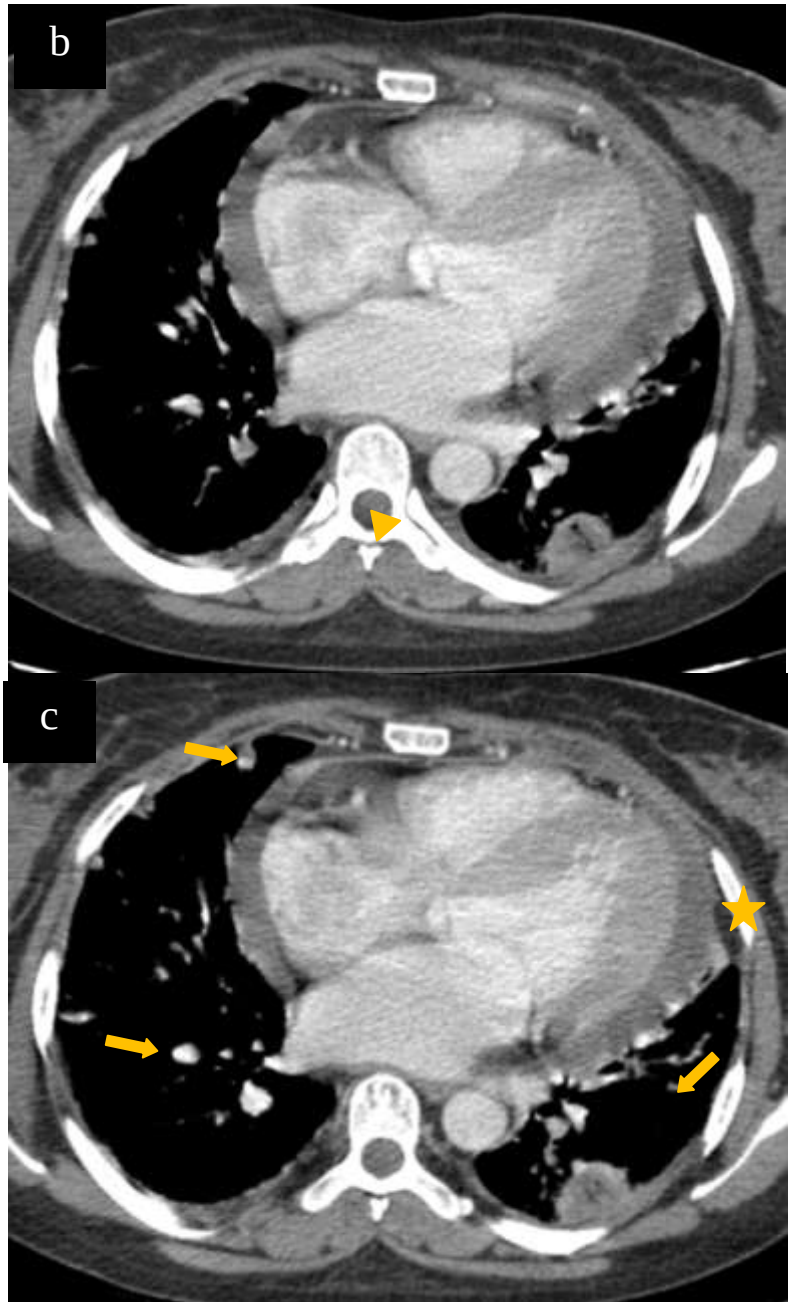


Figure 1:- Chest CT scan after contrast injection in parenchymal (a) and mediastinal (b,c) windows in axial sections showing multiple pulmonary nodules of random distribution, irregular contours (arrow), some are partially excavated (arrowhead). Note the presence of cardiomegaly with pericardial effusion (star).

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