

LE (lupus erythematosus) Cell in Pleural fluid Cytology

MAB MOMIN

Abstract:

During the COVID-19 (coronavirus disease) pandemic, a middle-aged woman was brought to the emergency department after experiencing sudden difficulty breathing after a two-week history of fever and cough. A contrast-enhanced computerized tomography (CECT) scan revealed minimal pericardial and pleural effusions on the left side. A

pleural effusion was tapped using ultrasound guidance and sent to the cytopathology laboratory. A cytological examination revealed numerous lupus erythematosus (LE) cells, resulting in a diagnosis of lupus pleuritis.

Key Words: LE cell ; Pleural effusion ; SLE

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Case Summary:

A 35-year-old woman was brought to the emergency department with sudden shortness of breath. She had a dry cough and fever for two weeks. On presentation, her oxygen saturation was 85% and her heart rate was 120 beats per minute. The respiratory rate was 28 breathes/minute. Auscultation of the respiratory system revealed minimal breath sounds in the left basal hemithorax. Her medical history is notable for SLE (systemic lupus erythematosus) and she has been under treatment for the past three months. A chest radiograph showed blunting of left costophrenic angle suggestive of left pleural effusion.

A CECT scan of the chest was performed, which revealed minimal left pleural effusion with basal lung collapse consolidation and minimal pericardial effusion. The remaining lung had a normal density and structural pattern. All other laboratory tests, including complete blood count, viral serology, liver function tests, renal function tests, coagulation function, C-reactive protein, and routine urinalysis were normal.

Ultrasound-guided thoracentesis was performed and 20 ml of serosanguinous fluid was aspirated and sent for clinical, biochemical and cytopathological examination. The total pleural effusion count was 190/mm³, with a predominance of neutrophils (78%), lymphocytes (20%), and reactive

mesothelial cells (02%). Pleural fluid biochemical analysis showed pleural fluid albumin 1.8 g/dL, pleural fluid LDH 611U/L, pleural fluid glucose 60 mg/dL, and pleural fluid protein 4.5 mg/dL.

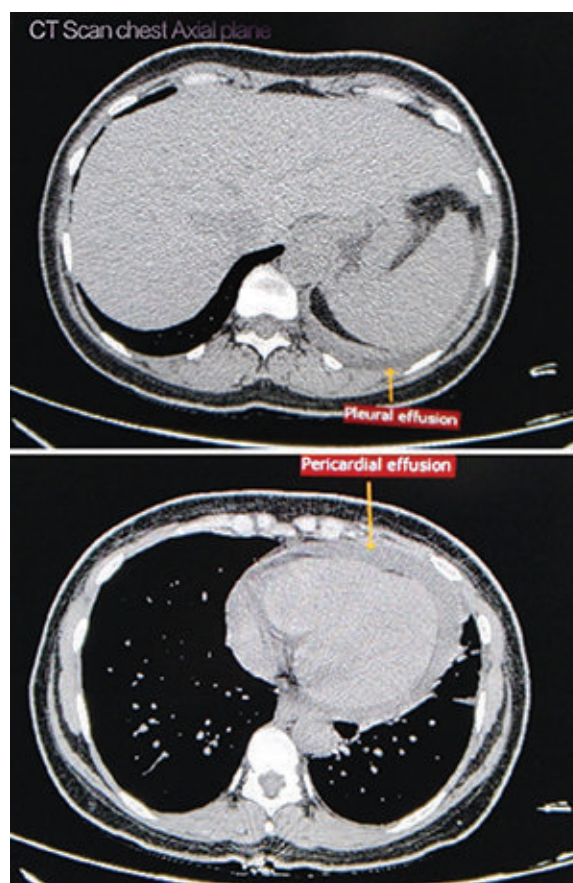


Fig.-1: Contrast enhanced Computerized tomography (CECT) scan (axial plane) showed left minimal pleural and pericardial effusion.

Address of Correspondence: Dr. Majed Abdul Basit Momin
Office: Consultant Pathologist, Department of Laboratory Medicine, Yashoda Hospitals, Malakpet, Nalgonda cross road, Hyderabad-500036, Mobile no.9849076574
Email id: majedmomin9@gmail.com.

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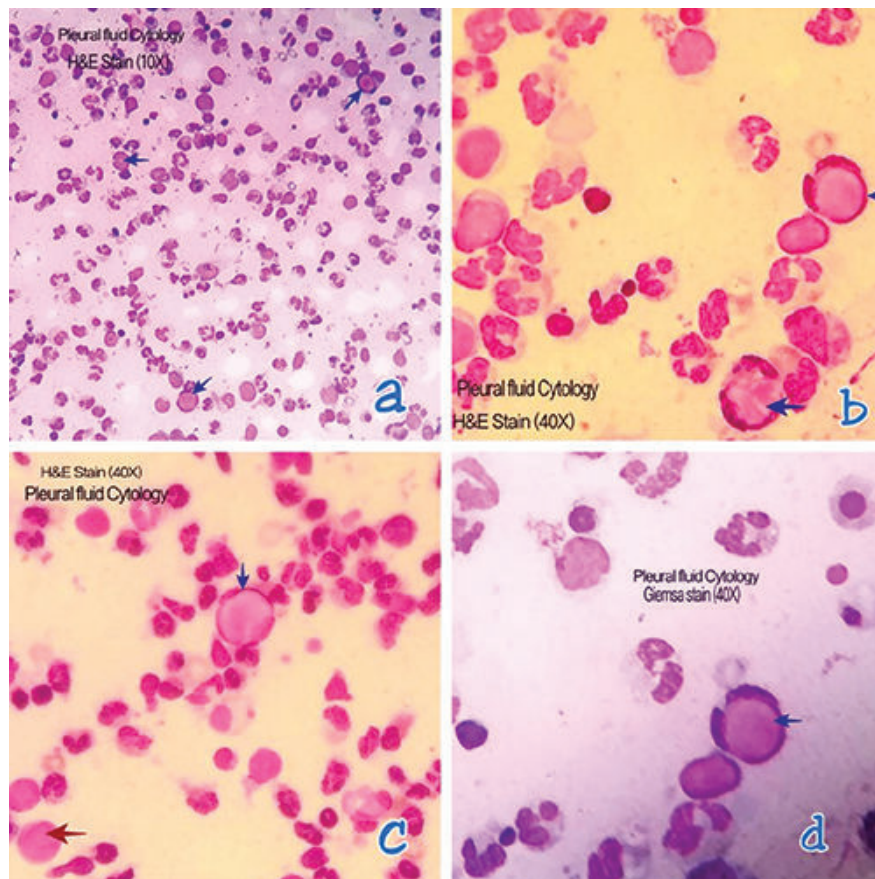


Fig.-2: Pleural fluid Cytology (H& E and MGG stained) smears with many LE Cells(blur arrow) and LE body (red arrow).

Cytospin cytology of the pleural fluid (stained with H&E and MGG) revealed numerous segmented neutrophils, lymphocytes, plasma cells and occasional macrophages. In addition, many LE cells in the form of a pink homogenous mass of nuclear chromatin material (LE body or haematoxylin body) have displaced the lobes of neutrophils to the rim of the cell (LE cell) seen. Pleural fluid cytology findings were consistent with lupus pleurisy. Based on the cytological findings, the patient was successfully treated with antibiotics and corticosteroids.

LE cells are phagocytic leukocytes, usually polymorphonuclear neutrophils and sometimes monocytes, which phagocytose homogeneous nuclear chromatin from damaged cells. To demonstrate the phenomenon of LE cells in vitro, blood samples were traumatized by exposing blood leukocyte nuclei to ANA (antinuclear antibodies). As a result, ANA binds to denatured and

damaged cell nuclei. However, this in vitro phenomenon may not reflect the in vivo phenomenon occurring in pleural effusions¹. SLE is associated with pleuropulmonary manifestations, with lupus pleuritis being the most common. Pleural effusion due to lupus pleurisy is usually an exudate and may be unilateral or bilateral. Lupus pleuritis in SLE is usually not life-threatening and the prognosis is usually favorable¹. This case illustrates the importance of careful cytological evaluation of the serous exudate, as the finding of LE cells in vivo can provide important diagnostic clues.

References:

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