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Case Report

Tubercular pleural effusion with epithelioid cells– A rare cytological case presentation

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ABSTRACT

Tuberculosis is one of the most prevalent disease of the developing countries resulting in significant morbidity. Extra pulmonary tuberculosis results in pleurisy among predilection to other organ and organ systems like lymph nodes. Pleurisy results in tubercular pleural effusion. Pleural effusions are mostly seen in immunocompetent patients. Here we present a case of tubercular pleural effusion which was diagnosed by cytology examination of pleural fluid in a 22-year-old female, who presented with shortness of breath, generalized weakness with decreased appetite. Radiological investigations revealed a unilateral pleural effusion. Pleural tapping was done and sent for cytological examination. Cytospin aspirate smear showed degenerated mesothelial cells, histiocytes, few epithelioid cells, mature lymphocytes and lymphocytes with splintered chromatin. A diagnosis of tubercular pleural effusion was made with further tests like CBNAAT for confirmation of diagnosis. CBNAAT was positive with a strain of Rifampicin sensitive mycobacterial tuberculosis identified. Patient was started on anti tubercular drugs according to the National Tuberculosis Elimination Program. To conclude, cytology is a fast inexpensive method for diagnosing the etiology of pleural effusions by pointing us in the right direction.

1. Introduction

Tuberculosis (TB) is an ancient microbial disease that is still among the most prevalent disease in the developing countries.[1] TB is a disease caused by Mycobacterium tuberculosis and rarely, by M. bovis and M. africanum infection.[2] As per the India TB Report 2022, the estimated incidence of all forms of tuberculosis in India for the year 2020 was 188 per 100,000 population (129-257 per 100,000 population).[3]

The most common form of extra pulmonary tuberculosis is lymph node tuberculosis followed by pleurisy which is the most common cause of pleural effusion in the endemic areas.[4] Infection of the pleura by mycobacterium tuberculosis bacilli lead to the intense inflammation of the pleura. This in turn results in the accumulation of fluid and inflammatory cells in the pleural space.[5]

Tubercular pleural effusion manifests as acute febrile illness in anyoung immunocompetent individual.[6] Common symptoms include non-productive cough with pleuritic chest pain.[7] Patient may present with the general symptoms of tuberculosis like weight loss, malaise and night sweats.[8]

2. Case Summary

A 22-year-old female presented to the TB and Chest clinic with complaints of shortness of breath and dry cough for the last two months. She had a history of weight loss, generalised weakness with decreased appetite. Patient had a live birth three months prior to the presentation and was breast – feeding at the time of the presentation. She had no history of thyroid disorder, diabetes mellitus and

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hypertension. Her haematological profile was unremarkable but with an increased erythrocyte sedimentation rate of 22 mm in the first hour.

Chest X- Ray showed pleura-based opacities with blunting of the costo-phrenic angle. USG abdomen did not reveal any abnormalities. CT scan of the thorax showed diffuse thickening of both parietal and visceral pleura with a split pleura sign with evidence of pleural fluid collection.

Subsequently, pleural tapping was performed aseptically along the posterior – axillary line at the fifth intercostal space. The colour of the aspirated fluid was straw coloured. Cytospin aspirate smear showed degenerated mesothelial cells, histiocytes, mature lymphocytes, lymphocytes with splintered chromatin and epithelioid cells (Figures 1 and 2).

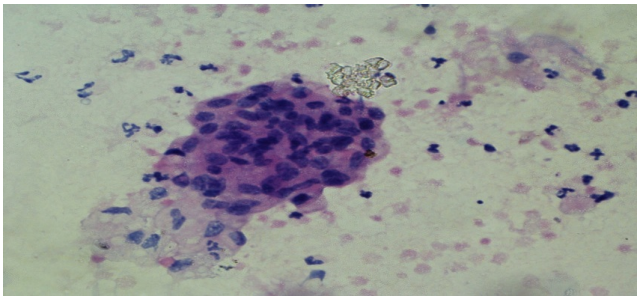

Fig. 1: Cytospin aspirate smear shows degenerated mesothelial cells, mature lymphocytes, admixed with few epithelioid cells. Haematoxylin and Eosin x40X.

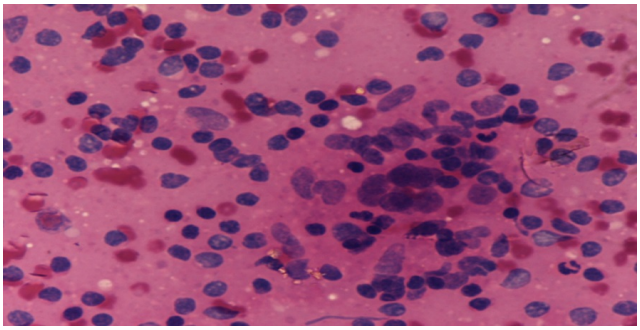

Fig. 2: Cytospin aspirate smear shows degenerated mesothelial cells, lymphocytes with splintered chromatin admixed with epithelioid cells. Haematoxylin and Eosin x40X.

Adenosine deaminase was increased to 60 IU/ L. An impression suggestive of Tubercular pleural effusion was given.

Ancillary tests for tuberculosis were advised for confirmation of the diagnosis. Mantoux test was positive with numerous acid- fast bacilli on Ziehl Neelson stain. CBNAAT turned out to be positive with Rifampicin sensitive strain of mycobacterium bacilli.

Our patient was administered Category 1 Anti tubercular drug regimen comprising of Isoniazid 300mg, Rifampicin 450mg, Ethambutol 800mg and Pyrazinamide 750mg for 2 months (intensive phase) and Isoniazid 300 mg, Rifampicin 450 mg, Ethambutol 800 mg for 4 months (continuation phase). The patient tolerated the medications well and is doing well on 6 months of follow up.

3. Discussion

Tubercular pleural fluid effusion is diagnosed by demonstration of mycobacterium tuberculosis bacilli in the pleural fluid. However, the bacterial yield in pleural fluid is low. The diagnosis is generally established in patients from the clinical features, pleural fluid examination, including cytology, biochemistry and pleural biopsy.[9] Also, Adenosine deaminase level is a useful adjunct marker in the diagnosis of tubercular pleural effusion. A level of 65IU/ Lis highly suggestive of effusion with tubercular etiology.[10]

On pleural fluid cytology, lymphocytic predominance is seen in a maximum of the tubercular effusions. There is a paucity of mesothelial cells in the pleural fluid. Some of the pleural fluid shows epithelioid cells and multinucleated giant cells.[11] Some cases show a direct involvement of the pleura effusion with presence of large number of mesothelial cells and lacy background, which may be due to proteinaceous secretion that is seen in cases of tuberculosis.[11] This feature is a pathognomonic sign of tubercular pleural effusion. However, the definitive diagnosis is not based on the effusion cytology. On pleural biopsy caseating granulomas are seen with acid fast bacilli rarely visualised directly in such specimen.[12] Presence of epithelioid cells in pleural fluid is an important clue for diagnosing tubercular pleural effusion.[13] Epithelioid cells can be seen as crowding around the lymphocytes.[14]

4. Conclusions

Microscopic study of effusion cytology is a fast, inexpensive method that can help to diagnose and indeed provide subtle clues to the diagnosis.

5. Conflict of Interest

The authors declare no relevant conflicts of interest.

6. Source of Funding

None.

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