Section: Pathology

Original Research Article

CYTOLOGY OF ASCETIC FLUID IN ABDOMINAL TUBERCULOSIS IN SOUTH KARNATAKA POPULATION

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Received : 14/11/2023
Received in revised form : 16/12/2023
Accepted : 03/01/2024

Keywords:
Peritenoscopy, AFB culture, Zn staining, ascetic fluid (AF), cytomorphological.

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DOI: 10.47009/jamp.2024.6.1.12

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2024; 6 (1); 58-60

Abstract

Background: TB can involve any parts of the gastro-intestinal tract and is a frequent site of extrapulmonary involvement. Both the incidence and severity of abdominal TB are increasing with an increase in HIV infection. **Materials and Methods:** Fifty (50) adult patients aged between 20 to 50 years with abdominal TB were studied. They had abdominal swellings, and clinical features of TB were studied. **Result:** Appearance of ascetic fluid (AF): 3 (6%) was reddish, 6 (12%) was transparent, 10 (20%) had cobweb formation, and 31 (62%) was strawy and cloudy. The cytomorphological study of AF was 3 (6%) histocytes, 8 (16%) mesothelial cells (occasionally). 6 (12%) mixed inflammatory, 11 (22%) predominant lymph nodes, 22 (44%) good cellularity, 6 (12%) AFB culture positive, and 9 (18%) Z n staining of AF was positive. **Conclusion:** Tuberculosis peritonitis is helpful in alerting the physician to the typical profile of these patients. With the advent of periteneoscopy, a more definitive diagnosis of TB peritonitis can be made, provided one has a high index of clinical suspension.

INTRODUCTION

Tuberculosis Bacillus (TB) remains a global public health challenge. It is estimated that 8.7 million new cases of TB and 1.4 million people died from TB. Tuberculosis peritonitis (TBP) has been proven to be the most important cause of high mortality.[1] The results of mycobacterial cultures might take more than 4 weeks, and their sensitivity ranges from 43% to 83%. In addition, the result depends on the quality of the samples cultured and the methods utilized, and acid-fast-stained smears are disappointingly intensive.[2] Hence, there is a need for an early and reliable method for the diagnosis of abdominal tuberculosis. Conventional diagnosis of tuberculosis employs microscopic identification (AFB).

However diagnosis by this method is difficult in paucibacillary samples like ascetic fluid, and a long period of time is needed for growth in culture. Hence, apart from AFB culture and staining, the cyto-morphological study of ascetic fluid and the appearance of ascetic fluid were also noted to evaluate the positivity of tuberculosis.

MATERIALS AND METHODS

50 (fifty) adult patients aged between 20 to 50 years visiting the pathology department of the Sambram Institute of Medical Sciences and Research Centre (SIMSAR), BEML, KGF Kolar, Karnataka-563115 were studied.

Inclusion Criteria

Patients with clinical features of abdominal tuberculosis like abdominal swelling, fever, night sweats, weight loss, and anorexia were selected.

Exclusion Criteria

Children below 20 years, immunocompromised, and with abdominal malignancy were excluded from the study.

Method: Each patient's undergone a routine chest-x-ray blood examination. Ascetic fluid smears were stained with Z-N staining, PAP, and Giemsa. In addition to this, the gross appearance of ascetic fluid was noted, and AFB culture was also done by the L. J. Method for the classification of ascetic fluid.

In non-tuberculosis, the ascetic fluid may be clear or turbid; the color may be reddish and show various types of cytomorphological patterns, like the predominance of neutrophils or a mixed population of inflammatory cells, the presence of plenty of mesothelial cells, or malignant cells, as per the etiology. The constant finding is the presence of macrophages and mesothelial cells in larger numbers, along with a few lymphocytes and neutrophils. Mesothelial cells may be seen in groups and sheets.

The study of ascetic fluid in the tubercular patient's appearance is chylous and cloudy or turbid.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Biochemically, SAAG is now considered more sensitive and specific.

The duration of the study was from May 2014 to April 2016.

Statistical Analysis: appearance, cytomorphological profile, and culture of staining were classified by percentage. The statistical analysis was carried out in SPSS software. The ratio of males and females was 2:1.

RESULTS

[Table 1] Appearance of Ascetic Fluid 3 (6%) reddish, 6 (12%) transparent, 10 (20%) cob-web formation, 31 (62%) straw, and cloudy

[Table 2] Cyto-Morphological Study of Ascetic Fluid: 3 (6%) histocytes, 8 (16%) mesothelial cells (occasionally), 6 (12%) mixed inflammatory, 11 (22%) predominant lymph nodes, and 22 (44%) good cellularity

[Table 3] Study of culture and staining of ascetic acid: 6 (12%) positive cultures of AFB of ascetic fluid, 44 (88%) negative, 9 (18%) Zn staining of ascetic fluid, and 41 (82%) negative.

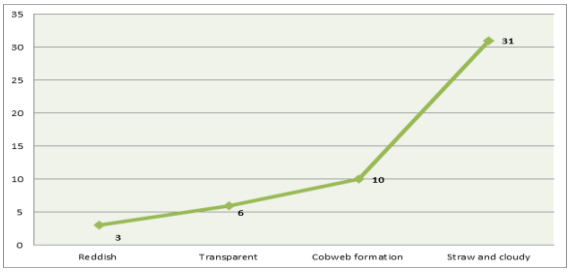

Figure 1: Appearance of Ascetic fluid

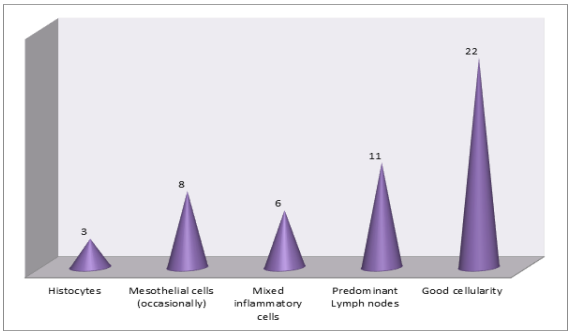

Figure 2: Cyto-morphological study of Ascetic fluid

Table 1: Appearance of Ascetic fluid

Colour of Ascetic fluid	No. of patients (50)	Percentage
Reddish	3	6
Transparent	6	12
Cobweb formation	10	20
Straw and cloudy	31	62

Table 2: Cyto-morphological study of Ascetic fluid

Cytological type	No. of patients (50)	Percentage
Histocytes	3	6
Mesothelial cells (occasionally)	8	16
Mixed inflammatory cells	6	12
Predominant Lymph nodes	11	22
Good cellularity	22	44

Table 3: Study of culture and staining of Ascetic fluid

Particulars	No of patients (50)	
	Positive with %	Negative with %
Culture of AFB Ascetic fluid	6 (12%)	44 (88%)
Z n staining of Ascetic fluid	9 (18%)	41 (82%)

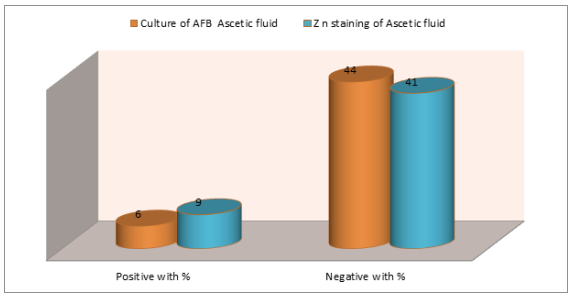

Figure 3: Study of culture and staining of Ascetic fluid

DISCUSSION

Present study of cytology of ascetic fluid in abdominal tuberculosis in the south Karnataka population. The appearance of ascetic fluid (AF) was 3 (6%) reddish, 6 (12%) transparent, 10 (20%) cobweb formation, and 31 (62%) straw and cloudy [Table 1]. The cytomorphological study of AF found that 3 (6%) had histocytes, 8 (16%) had mesothelial cells, (occasionally), 6 (12%) were mixed-inflammatory, 11 (22%) had predominant lymph nodes, and 22 (44%) had good cellularity [Table 2]. In the culture and staining study, 6 (12%) were positive for AFB. Ascetic fluid had 9 (18%) were Positive for Zn staining of Ascetic fluid [Table 3]. These findings are more or less agreement with previous studies.[5-7]

The peritoneal cavity of the abdomen is drained by the lymphatic vessels, and the stomach of the peritoneal surface of the diaphragm has been due to absorption. Fibrin plugs and fibrous adhesions may obstruct the flow of these lymphatic vessels, especially in cirrhosis, facilitating ascetic fluid. It

ISSN (O): 2687-5365; ISSN (P): 2753-6556

appears that increased hepatic lymph production, faulty disposal of hormone salt and water retention, and disturbed excretion of these substances appear to be the causes of ascetic. In peritoneal or abdominal infections, ascetis develops as a result of irritation. The patient presenting with ascetis may be indicative of non-specific inflammation by TB, cirrhosis of the liver or renal pathologies, or neoplasm. The Monteux test has little diagnostic value. In abdominal tuberculosis and pulmonary TB, evidence of chest x-rays is found in 50% of cases. ELISA and SAFA (soluble antigen fluorescent antibody) provide information about TB, but their positivity is restricted to 85–95% in the abdominal TB. ELISA remains positive even after therapy, and the reproducibility of Elisa is poor. The Elisa test is costlier and not affordable to poor and middle-class patients. Hence, the study of AF is useful for the diagnosis of TB in middle-class and poor patients too.[8]

In the abdominal TB, the presence of good cellularity, absence of mesothelial cells, and predominance of lymphocytes are constant and positive findings for TB. Esinophilia, not found in a single case of abdominal TB, is the commonest cause of ascetis.[9] TB of the abdomen can involve any part of the abdomen (GIT) and is the sixth most frequent site of extra-pulmonary involvement.[10] It can have a varied presentation, frequently mimicking other common and rare diseases. Clinical presentations include dysphasia, odynophagia, and mid-oesophageal ulcers due to oesophageal TB; dyspepsia and gastric outlet obstruction due to gastro-duodenal TB; lower abdominal pain and haematochezia due to colonic TB; and annular rectal stricture and multiple perianal fistulas due to rectal and anal TB.[11,12] Hence, the cytological study of AF has very important diagnostic value.

Limitation of study: Owing to the tertiary location of the research center, the small number of patients, and the lack of the latest technology, we have limited findings and results.

CONCLUSION

Present study of the cytology of AF in abdominal TB has diverse and non-specific symptomatology because abdominal TB is defined as infection of the peritoneum or solid abdominal organs with Mycobacterium tuberculi. The peritoneum and ileo-ceacal region are the most likely sites of infection and are involved in the majority of cases by hematogenous spread or through swallowing of infected sputum from primary pulmonary tuberculosis (PT). PT is apparent in less than half of the patients with AF of the abdomen. Hence, endoscopic, radiological, microbiological, histological, and molecular techniques are needed to corroborate the TB. Moreover, AF of the abdomen is associated with HIV infection as well. Hence, this study demands further genetic, immunological, nutritional, and pathophysiological studies because the exact pathogenesis of AF is still unclear.

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ISSN (O): 2687-5365; ISSN (P): 2753-6556