



Study of cytology of Ascetic fluid in diagnosis of Abdominal tuberculosis – Retrospective Study

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Abstract

Background: Tuberculosis of peritonitis remains a diagnostic challenge for clinicians. AFB of ascetic fluid cyto-morphological and appearance will be helpful to rule out apart from Blood examination.

Method: 90 adult patients aged between 20 to 50 years having abdominal swellings and having clinical features of tuberculosis were studied.

Results: Appearance of Ascetic fluid (AF) – 5 (5%) was reddish, 11 (12.2%) transparent, 18 (20%) cobweb formation 55 (62.2%) straw and cloudy. Cyto-morphologically 5 (5.5%) histocytes, 14 (15.5%) Mesothelial cells (occasionally) 11 (12.2%) mixed inflammatory, 21 (23.3%) predominant lymph nodes, 39 (43.3%) good cellularity out of 90 11 (12.2%) positive in culture AFB ascetic, 17 (18%) positive in Z n staining of Ascetic fluid.

Conclusion: This pragmatic study of cytology of AF in diagnosis of abdominal tuberculosis will be tool for clinician to confirm tuberculosis and help for differential diagnose from many lethal diseases of abdomen.

Keywords: AF – Ascetic fluid, AFB culture, Zn-Staining, L J Method, PAP, Giesma

Introduction

The abdominal Tuberculosis Bacillus (TB) usually occurs in four forms, tuberculosis lymphadenopathy ⁽¹⁾, peritoneal tuberculosis, gastrointestinal tuberculosis (GI) and visceral tuberculosis involving solid organs. Usually combination of these findings occurs in any individual patient. Despite of a treatable and curable disease it carries a mortality rate up to 12% in India ⁽²⁾⁽³⁾. A high clinical index of suspicion and judicious use of diagnostic procedures certainly help in timely diagnosis and treatment and thus will reduce the rate of mortality of this curable but potentially lethal disease ⁽⁴⁾.

Hence there is a need for an early and reliable method for the diagnosis of abdominal tuberculosis. Convention diagnosis of tuberculosis employs microscopic identification of AFB.

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

Material and Method

90 adult patients aged between 20 to 50 years visiting pathology department of Shri Sathya Sai Medical College and Research institute hospital Tiruporur Guduvancherry Main Road, Ammapettai Netlkuppam – 603108, Kanchipuram (dist) Tamil Nadu were studied.

Inclusion Criteria: The patients having clinical features of abdominal tuberculosis like abdominal swelling, fever, night sweats, weight loss, Anorexia were selected.

Exclusion: Children below 20 years, Immune compromised and abdominal malignancy were excluded from the study.

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

In Non-tuberculosis Ascetic fluid may be clear or turbid; colour may be reddish and show various type of cyto-morphological patterns like predominance of neutrophils or mixed population of inflammatory cells, presence of plenty of Mesothelial cells or malignant cells as per the aetiology. The constant finding is presence of macrophages and Mesothelial cells in larger number along with few lymphocytes and neutrophils Mesothelial cells may be seen groups and sheets.

Study of Ascetic fluid in Tubercular patient's appearance is chylous and cloudy or turbid. Biochemically (SAAG) is now considered a more sensitive and specific.

Duration of study was from May-2014 to April-2016.

Statistical analysis: Appearance, cyto-morphological profile and culture of staining was classified with percentage. The statistical data was carried out in SPSS software. The ratio of male and female was 2:1.

Observation and Results

Table-1: Appearance of Ascetic fluid 5 (5.5%) reddish, 11 (12.2%) Transparent, 18 (20%) cob-web formation, 56 (62.2%) straw and Cloudy

Table-2: Cyto-Morphological study of Ascetic fluid – 5 (5.5%) histocytes, 14 (15.5%) Mesothelial cells (occasionally), 11 (12.2%) Mixed inflammatory cells, 21 (23.3%) predominant lymph nodes, 39 (43.3%) good cellularity

Table-3: Study of culture and staining of Ascetic acid.

Culture of AFD Ascitis-11 (12.2%) positive, 79 (87.7%) negative

Zn staining of Ascetic fluid – 17 (18.8%) positive, 73 (81.1%) negative

Discussion

Present study of ascetic fluid in diagnosis of abdominal tuberculosis
Appearance of ascetic fluid – 5 (5.5%) reddish, 11 (12.2%) transparent, 18 (20%) cobweb formation, 56 (62.2%) straw and cloudy
Cyto-morphologically AF was 5 (5.5%) had histocytes, 14 (15.5%) Mesothelial cells, (occasionally), 11 (12.2%) mixed inflammatory cells, 21 (23.3%) had predominant lymph nodes, 39 (43.3%) had good cellularity (Table-2) Culture and staining of AF was AFB culture had 11 (12.2%) Positive, 79 (87.7%) negative In Zn staining, 17 (18.8%) were positive, 75 (81.1%) were negative (Table-3). These findings are more or less Agreement with previous studies ⁽⁵⁾⁽⁶⁾⁽⁷⁾.

The peritoneal cavity of abdomen drained by the lymphatic vessels, the stomas of peritoneal surface of the diaphragm have been due to absorption. Fibrin plugs and fibrous adhesions may obstruct flow of these lymphatic vessels especially in the cirrhosis, facilitating ascetic fluid. It is due to increased hepatic lymph production, faulty disposal of hormone salt and water retention and disturbed excretion of these substances appear to be the cause of ascetis. In the peritoneal or abdominal infection ascetis develop as a result of irritation. The patient presenting with ascetis may be the indicative of non-specific inflammation by TB, cirrhosis of liver or renal

pathologies or neoplasm. Montoux test has little diagnostic value. In the abdominal tuberculosis pulmonary TB, evidence of chest-x-ray in 50% cases ELISA, SAFA (soluble antigen Fluorescent Antibody) provide information about TB but their positivity restricted to 85-95% in the abdominal TB but ELISA remain positive even after therapy and reproducibility of Elisa is poor. As the Elisa test is costlier and not affordable to poor and middle class patients. Hence study of AF is useful for the diagnosis of TB in middle class and poor patients too ⁽⁸⁾.

In the abdominal TB presence of good cellularity, absence of Mesothelial cells and predominate of lymphocytes is constant and positive findings for TB, Eosinophilia are not found in a single case abdominal TB, is the commonest cause of ascetis⁽⁹⁾. TB of abdomen can involve any part of the abdomen (GIT) and sixth most frequent site of extra-pulmonary involvement ⁽¹⁰⁾. It can have varied presentation, frequently mimicking other common and rare diseases rate clinical presentation include dysphasia, odynophagia and mid-oesophageal ulcer 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 fistula due to rectal and anal TB ⁽¹¹⁾. Hence cytological study of AF has very important diagnostic value.

Summary and conclusion

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

Table – 1**Appearance of Ascetic fluid**

Colour of Ascetic fluid	No. of patients (90)	Percentage
Reddish	5	5.5
Transparent	11	12.2
Cobweb formation	18	20
Straw and cloudy	56	62.2

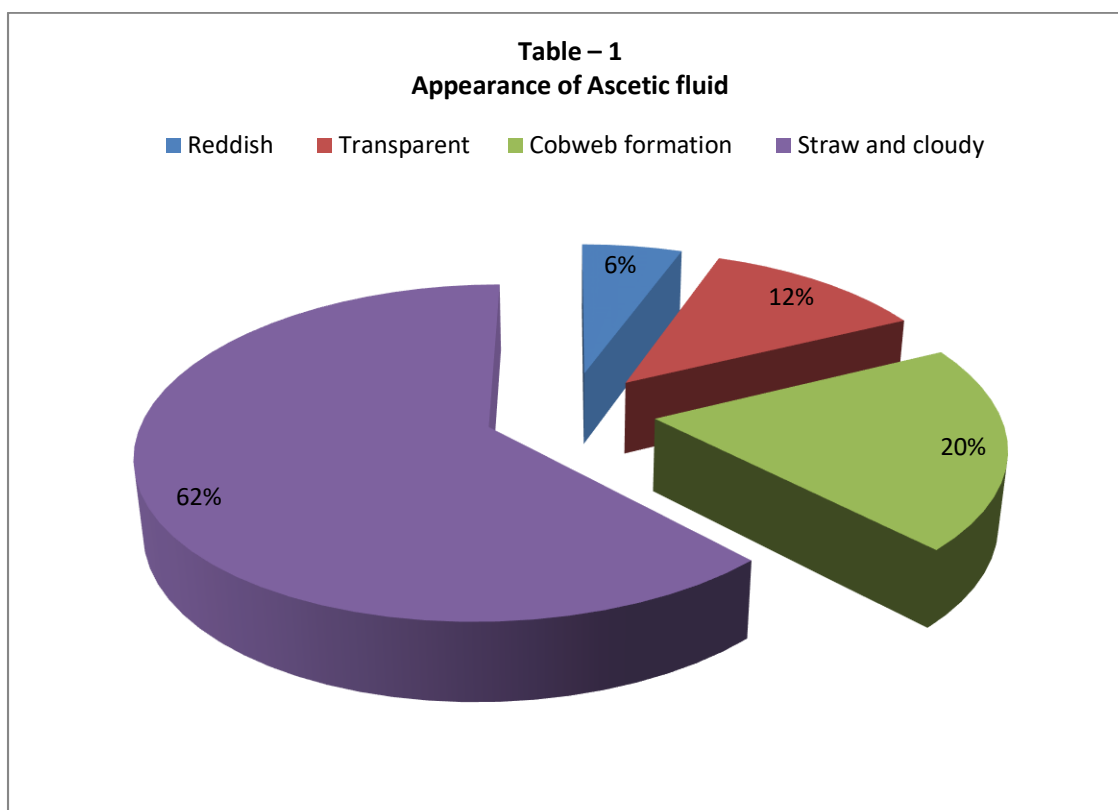


Table – 2**Cyto-morphological study of Ascetic fluid**

Cytological type	No. of patients	Percentage
Histocytes	5	5.5
Mesothelial cells (occasionally)	14	15.5
Mixed inflammatory cells	11	12.2
Predominant Lymph nodes	21	23.3
Good cellularity	39	43.3

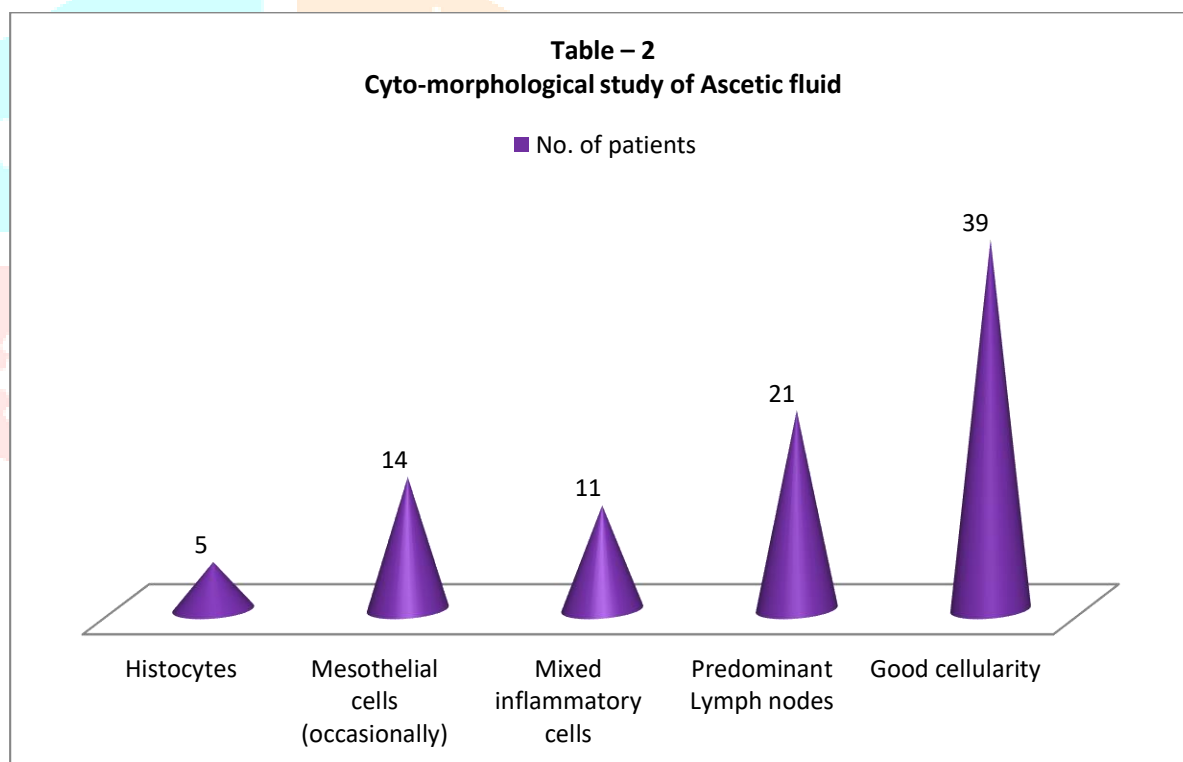
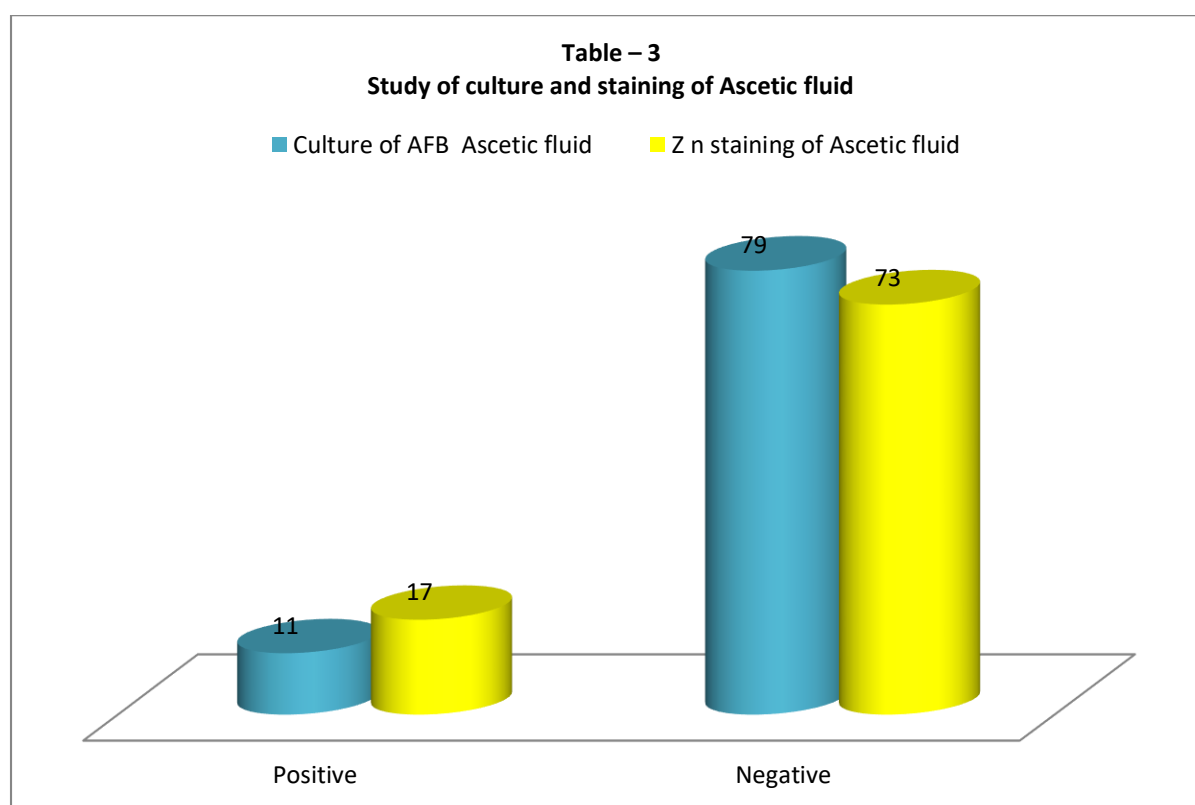


Table – 3**Study of culture and staining of Ascetic fluid**

Particulars	No of patients (90)	
	Positive with %	Negative with %
Culture of AFB Ascetic fluid	11 (12.2%)	79 (87.7%)
Z n staining of Ascetic fluid	17 (18.8%)	73 (81.1%)



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