



## DIAGNOSTIC VALUE OF CYTOPATHOLOGY IN PLEURAL AND ASCITIC FLUIDS AT TERTIARY CARE HOSPITAL

### Pathology

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### ABSTRACT

**Introduction:** Fluid cytology studies are preferred over biopsy, which may miss focal lesions. Objectives: To examine the cytology of aspirated pleural and ascitic fluid and classify them according to age, sex, macroscopic appearance, and neoplastic or non-neoplastic type. **Material and Methods:** Total 441 fluids were studied, of which 198 were pleural fluid and 243 were ascitic fluid. The received fluid was centrifuged and smears were prepared from the sediment and stained with giemsa stain. **Results:** Maximum cases were observed in 21-30 years in pleural fluid and 51-60 years in ascitic fluid. Overall male : female ratio was 1.05:1. Ascites and pleural fluid show the most common non- malignant lesion is inflammatory pathology and the most common malignant lesion is adenocarcinoma. **Conclusion:** This non-invasive technique has become an essential tool in the diagnosis of many diseases and is especially valuable in cases where more invasive procedures may be contraindicated. Cytology should be considered the first line of investigation as it is a simple and cost effective procedure.

### KEYWORDS

Cytology, pleural fluid, ascitic fluid

### INTRODUCTION

Abnormal accumulation of fluid in pleural cavity is defined as pleural effusion and accumulation of fluid in peritoneal cavity is known as ascites<sup>[1]</sup>. Cytopathology is a medical specialty that deals with the examination of cells for the detection of diseases. Pleural and ascitic fluids are two types of body fluids that can be examined by cytopathology for diagnostic purposes. These fluids are often obtained as part of routine medical care or in the investigation of specific symptoms. The diagnostic value of cytopathology in pleural and ascitic fluids lies in its ability to detect cancerous or non-cancerous conditions, infections, and other abnormalities. This non-invasive technique has become an essential tool in the diagnosis of many diseases and is especially valuable in cases where more invasive procedures may be contraindicated. The analysis of these fluids can provide critical information that guides the selection of appropriate treatment options, making cytopathology an indispensable component of modern medical practice.

### MATERIAL AND METHODS

The study was carried out in department of Pathology, Gajra Raja medical college , Gwalior, Madhya Pradesh for a period of 6 months from January 2022 to June 2022. A total of 441 fluids were studied, of which 198 were pleural and 243 were ascites. These liquids are contained in clean, dry, properly labelled and closed sterile containers with duly completed request forms. General appearance of the liquid was noted . Freshly aspirated fluid samples were used to prepare smears without any added anticoagulant. The received liquid was centrifuged at 2000 rpm for 5 minutes.

Discard the supernatant. Transfer the remaining pellet to a clean, dry glass slide and distribute evenly. Slides were stained with Giemsa and examined under both low and high power magnification. Cytological findings were reported and analysed.

### RESULTS

In this study, a total of 441 fluid samples were studied, out of which, 198 were pleural fluid and 243 were ascitic fluid. The maximum number of cases were observed in 21-30 years of age group in pleural effusion and 51-60 years of age group in ascitic fluid (Table 1).

Overall male : female ratio 1.05:1 ( Near equal) (Table 2). But separately in pleural effusion male:female ratio is 1.4:1 and in ascitic fluid male:female ratio is 0.8:1.

Out of 198 cases of pleural fluid, 98 were straw coloured, 60 fluids were haemorrhagic, 28 were turbid and 12 fluids were clear on gross examination. Cytological examination revealed 187 non – neoplastic pleural effusions of which 186 fluids were inflammatory effusions and 1 fluids were tuberculous effusions. Amongst the malignant pleural effusions 3 cases diagnosed as suspicious of malignancy and 8 cases

reported confirmed as positive for malignancy (Adenocarcinoma) (Table 3).

Out of 243 cases of ascitic fluid, 140 were straw coloured, 80 Fluids were haemorrhagic, 15 were clear and 08 fluids were turbid on gross appearance. Cytological examination revealed 228 cases of inflammatory effusion (non-neoplastic). Amongst the malignant ascitic fluids 7 cases diagnosed as suspicious of malignancy and 8 cases reported confirmed as positive for malignancy including 1 case as pseudomyxoma peritonei (Table 4).

Table 1: Age wise distribution of cases

| Age group (in year) | Pleural Fluid | Ascitic Fluid |
|---------------------|---------------|---------------|
| 0-10                | 1             | -             |
| 11-20               | 25            | 15            |
| 21-30               | 50            | 28            |
| 31-40               | 24            | 48            |
| 41-50               | 28            | 48            |
| 51-60               | 23            | 57            |
| 61-70               | 37            | 33            |
| 71-80               | 10            | 11            |
| 81-90               | -             | 3             |
| Total               | 198           | 243           |

Table 2: Gender wise distribution of cases

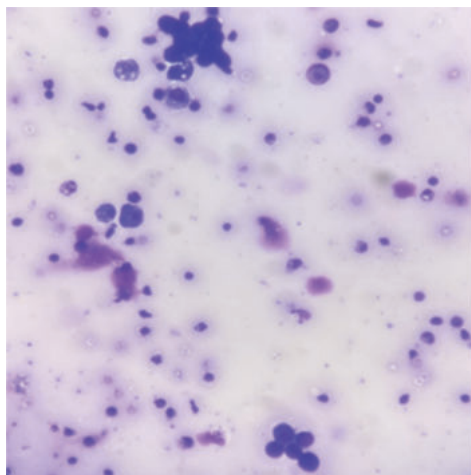
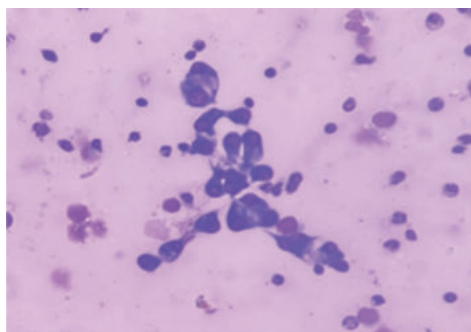
| Gender | Pleural Fluid | Ascitic Fluid |
|--------|---------------|---------------|
| Male   | 117           | 109           |
| Female | 81            | 134           |

Table 3: Cytological examination of pleural fluid

| Effusion               | Cytological Examination   | Number of Cases |
|------------------------|---------------------------|-----------------|
| Non-Neoplastic         | Inflammatory effusion     | 186             |
|                        | Tubercular effusion       | 1               |
| Neoplastic (Malignant) | Suspicious for malignancy | 3               |
|                        | Positive for malignancy   | 8               |
| Total                  |                           | 198             |

Table 4: Cytological examination of ascitic fluid

| Effusion               | Cytological Examination   | Number of Cases |
|------------------------|---------------------------|-----------------|
| Non-Neoplastic         | Inflammatory effusion     | 228             |
| Neoplastic (Malignant) | Suspicious for malignancy | 7               |
|                        | Positive for malignancy   | 7               |
|                        | Pseudomyxoma peritoni     | 1               |
|                        |                           | 243             |

**Figure (a) And (b) Shows Adenocarcinoma In Ascitic Fluid (400x)**

## DISCUSSION

The present study was undertaken to study the cytology of aspirated pleural and ascitic fluids. In this study, a total of 441 Fluid samples were studied, out of which, 198 were pleural fluid and 243 were ascitic fluid. Overall, we observed that the maximum number of cases of pleural fluid were in 21-30 years of age group and ascitic fluid were in 51-60 years of age group.

Pleural effusions can be caused by pulmonary or non – pulmonary diseases and are mostly due to malignancy, congestive heart failure, tuberculosis or infections [2,3,4]. In our study of pleural fluid analysis, male preponderance was seen. Romero et al [5], Swammy et al [6] and Kushwaha et al [7] reported similar findings in their study. Most common non malignant lesion is inflammatory pathology and most common malignant lesion is adenocarcinoma.

In over study ascitic fluids shows most common non malignant lesion is inflammatory pathology and most common malignant lesion is adenocarcinoma. Ascites can be caused by various causes which includes decompensation of chronic hepatic cirrhosis, tumors, congestive heart failure and inflammatory conditions. Less common causes include nephrotic syndrome, exudative [8] enteropathy and chylous ascites.

In over study 26 cases showed malignant effusion. Malignancy in ascitic fluid was seen in 15 cases and pleural fluid showed malignant cells in 11 cases. Consistent with other studies, adenocarcinoma was the most common type of malignancy in our study.9, 10 Jha R et al 11 in their studies have shown that adenocarcinoma is the most common cancer. Sears and Hajdu 12 also found similar findings in their study.

## CONCLUSION

Cytopathology in pleural and ascitic fluids is a valuable diagnostic tool that provides important diagnostic information. This technique is non-invasive, relatively quick, and provides valuable insights into the presence of diseases such as cancer and infections. The analysis of pleural and ascitic fluids using cytopathology is an essential component of modern medical practice that allows clinicians to make more informed treatment decisions.

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