

Case Series

Ascitic Fluid Cytology- Rewarding Tool in the Discovery of Unknown

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Abstract

Background: Ascites is a common clinical finding with wide range of etiology. Peritoneal fluid analysis – most efficient method of diagnosing cause of the peritoneal effusion. In correlation with clinical history and physical examination, benign and malignant cause of effusion can be identified by cytology, for proper management of the patient.

Materials and Methods: One year retrospective study of 144 cases of centrifuged ascitic fluid were subjected to cytological examination.

Results: Most cases of ascites were under the age group of 45- 60 years. Cases with known etiology- 124(among which 79% were benign, 21% were malignant). Cases with unknown etiology- 20 (malignant effusion were diagnosed with the help of cytological examination).

Conclusion: The primary role of ascitic fluid cytology is the detection of malignancy. In patients without known malignancy, cytological evaluation may not only be able to identify the presence of tumour cells but also classify its type. In patients with malignancy, the presence of tumour cells has prognostic implication. Since peritoneal fluid cytology is a cost effective and rapid diagnostic method- it must be done as a routine procedure in patients with peritoneal effusion.

Keywords

- Peritoneal Fluid Cytology
- Unknown Etiology
- Malignant Effusion

INTRODUCTION

There are 3 major body cavities- pleural cavity, peritoneal cavity and pericardial cavity. These cavities are lined by mesothelial cells. Normal amount of fluid in these cavities are about 50 ml. Ascites is defined as accumulation of fluid in peritoneal cavity. Commonly seen in clinical practice with a wide range of etiology. Ascitic fluid can be sent for biochemical analysis and for cytological examination. It is of two types- exudative effusion and transudative effusion. Transudative effusion occurs due to fluid filtering through the intact blood vessel when there is obstruction in its flow [1]. Common causes of transudative effusion includes- congestive cardiac failure, cirrhosis, portal vein obstruction and in nephrotic syndrome. Common causes of exudative effusion includes abdominal malignancy, tuberculosis and pancreatitis [2].

AIM AND OBJECTIVE

To study the cytology of ascitic fluid in various diseases to establish clinico-cytological correlation for management.

MATERIALS AND METHODS

This study was conducted in the department of pathology, Madurai medical college for a period of 1 year from October 2022

to October 2023. Ascitic fluid was received in cytology lab. Fluid was processed as soon as it was received. First centrifugation was done at the rate of 2000 rpm for 10 minutes [3]. Supernatant was discarded. The sediment was transferred to glass slide, spread, fixed and stained with hematoxylin and eosin stain.

RESULTS

Totally 144 cases of ascitic fluid was studied. Out of 144 cases, 124 cases were of known etiology and 20 cases were of unknown etiology. Most common cause of peritoneal effusion among cases of known etiology was hepatic cirrhosis. Other causes includes chronic kidney disease, inflammation, heart failure and tumour (Table 1). Among cases with known malignancy which

Table 1:

Causative Factor	Samples	Percentage
Hepatic Cirrhosis	66	45%
Chronic Kidney Disease	15	10%
Inflammation	13	9%
Heart Failure	5	3%
Tumour	25	17%
Unknown Etiology	20	13%
Total	144	

showed smears positive for malignant cells, the most common was cause of malignancy was ovarian tumours among female and gastrointestinal tract malignancy among male [4,5]. These results aided in staging of malignancy and in treatment aspect of the patient.

20 of our cases - presented to OPD with symptoms of abdominal distension, loss of appetite and loss of weight. These patients hadn't undergone any other investigations or imaging. Ascitic fluid tapping was done as a OPD procedure and fluid was immediately sent for cytological analysis. Smears of these 20 cases showed malignant cells without a known etiology (Table 2). 3 of our most interesting cases are elaborated in the discussion part.

DISCUSSION

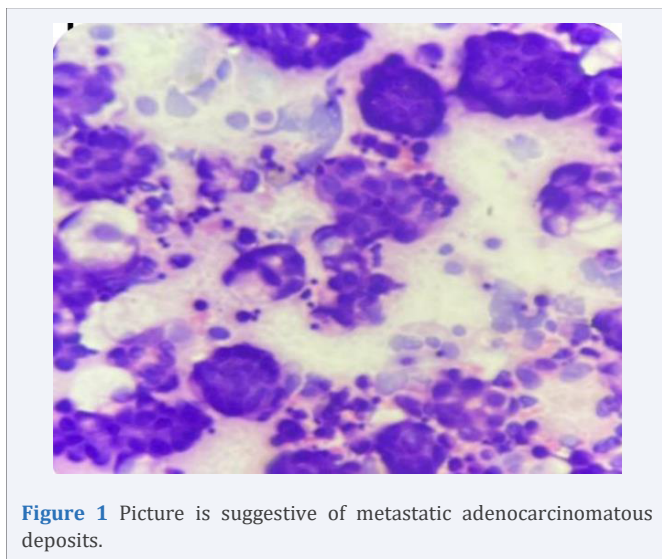
Case 1

55 years old male presented with the complaints of abdominal distension, loss of appetite and loss of weight for the past 3 months with altered bowel habits. Received ascitic fluid of the patient in microscopic examination.

Smears studied show tumour cells in sheets, clusters and in attempted glandular pattern. The tumour cells are pleomorphic with hyperchromatic nuclei and moderate to scant cytoplasm in an eosinophilic fluid background (Figure 1).

Table 2:

Primary Site	Cytology Positive	
	Male	Female
Ovary	-	13
Breast	-	-
Liver	1	-
Cervix	-	-
Gastrointestinal Tract	8	2
Lymph Node	1	-
Unknown Primary	13	7



Case 2

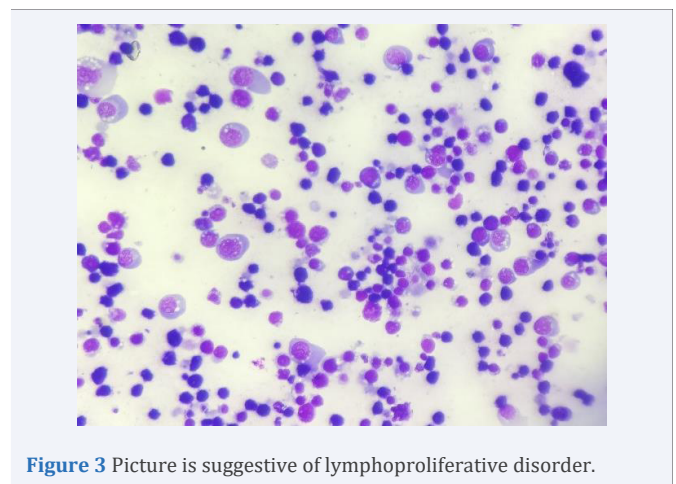
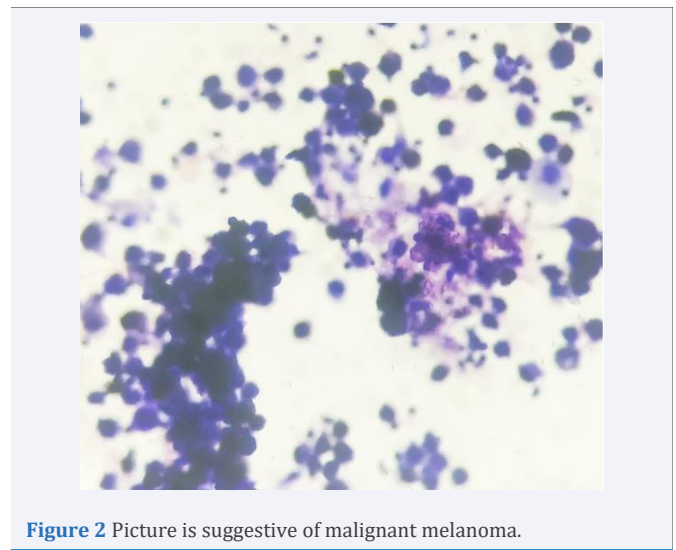
53 years old male presented with the complaints of breathing difficulty, abdominal distension, loss of appetite and loss of weight. But PET CT was done for him suspecting malignancy. PET CT showed multiple uptake in the peritoneal region and in bilateral lungs- It was a tumour of unknown origin.

Smears studied show clusters and sheets of round to oval tumour cells with pigmentation showing irregular pleomorphic nuclei and prominent nucleoli in a clean background (Figure 2). Using this smear study, we were able to find out the tumour origin.

Case 3

60 years old female presented with abdominal pain, abdominal distension and also generalized lymphadenopathy. Clinically was suspected to be Lymphoma.

Microscopy- Smears studied show scattered mature lymphocytes and lymphoblasts in a fluid background. Lymphoblasts are large cells with increased nuclear cytoplasmic ratio, condensed chromatin and inconspicuous nucleoli (Figure 3).



CONCLUSION

The primary role of ascitic fluid cytology is the detection of malignancy. In patients without known malignancy, cytological evaluation may not only be able to identify the presence of tumour cells but also classify its type. In patients with malignancy, the presence of tumour cells has prognostic implication. Since peritoneal fluid cytology is a cost effective and rapid diagnostic method- it must be done as a routine procedure in patients with peritoneal effusion.

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