

EFFUSION CYTOLOGY AT KING FAISAL HOSPITAL, KIGALI: A REVIEW OF 151 CASES

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ABSTRACT

Introduction: The clinical management of patients presenting with effusions requires the determination of the cause of the effusion for direction of options of management. The cytologic examination of the effusion is usually required to rule out or confirm malignancy. This is a retrospective review of 151 effusions cytologically investigated at King Faisal Hospital.

Methods: One hundred and fifty one effusions collected in EDTA tubes were investigated. The specimens were centrifuged, and from the sediment alcohol-fixed, air-dried smears were prepared for Papanicolaou and Diff-Quik staining, respectively.

Results: From the total of 151 effusions, malignant cells were identified in 26 cases as follows: 15 pleural, 8 ascitic and 3 peritoneal malignancies consisted of 15 adenocarcinomas, 5 lymphomas, 3 mesotheliomas 2 myelomas and 1 small cell carcinoma.

Conclusions: Malignant effusions constituted 17 percent of all the effusions examined. Adenocarcinomas were the most frequently diagnosed metastatic malignancies in both pleural and ascitic effusions and in both females and males. Primary sites of most of the malignancies could not be determined except for mesotheliomas and small cell carcinoma.

Key words: Effusion - Benign - Malignant - Adenocarcinoma - Lymphoma - Mesothelioma - Myeloma

Introduction: Il est primordial de déterminer la cause d'un épanchement afin d'orienter le clinicien dans ses différents choix thérapeutiques lors de la prise en charge des patients présentant un épanchement. D'habitude, l'analyse cytologique d'un épanchement est requise pour exclure ou confirmer une malignité. Ce qui suit est une étude rétrospective portant sur 151 cas d'épanchements pour lesquels des analyses cytologiques ont été faites à l'Hôpital Roi Fayçal, Kigali.

Matériel et Méthodes: 151 épanchements collectés dans des tubes avec E.D.T.A ont été analysés. Les échantillons étaient centrifugés et les culots étalés sur lames. Après fixation à l'alcool et séchage à l'air libre, nous avons successivement fait les colorations de Papanicolaou et Diff. Quik.

Résultats: Parmi les 151 épanchements, les cellules malignes ont été identifiées dans 26 échantillons comme suit: 15 épanchements pleuraux, 8 liquides d'ascite et 3 liquides péritonéaux.

Il s'agit de 15 adénocarcinomes, 5 lymphomes, 3 mésothéliomes, 2 myélomes et 1 carcinome à cellules minuscules.

Conclusion: De tous les épanchements analysés, 17% sont d'origine cancéreuse. Les adénocarcinomes sont les cancers avec métastase les plus fréquemment diagnostiqués dans les épanchements pleuraux et ascitiques chez l'homme comme chez la femme. Les sites primaires de la plupart des cancers n'ont pas été déterminés, sauf pour les mésothéliomes et le carcinome à petites cellules.

Mots clés: Épanchement - Benin - Malin - Adénocarcinome - Lymphome - Mésothéliome - Myélome

INTRODUCTION

The abnormal increase and probable cause in the amount of fluid in pleural, pericardial and peritoneal cavities often presents challenges to both clinician and the laboratory. This is usually investigated by examination of aspirated fluid from these cavities [1, 2].

The clinical importance of examination of effusions cannot be overemphasized, as further management of the patient may be dependent largely on results of laboratory examination of the effusion [1,2,3,4].

The cytologic finding of malignant cells in these specimens denotes advanced disease somewhere in the body and is of great prognostic importance. Malignant cells in these effusions can also be used in the immunocytochemical metastatic work-up in finding the primary site of the malignancy [3, 7].

Apart from malignancies, diagnoses of various inflammatory and infectious conditions may be made on serous effusions. For cytologic investigations of serous effusions, essential clinical information that includes the patients age, sex and any known history of malignancy or other predisposing factors to the development of an effusion, were mandatory for an accurate cytologic diagnosis [1,2].

This was a retrospective review of 151 effusions cytologically investigated at King Faisal Hospital in a period of 36 months.

METHODS

Effusions were collected in EDTA tubes and brought to the cytology laboratory. In the laboratory specimens were centrifuged and from the sediment, wet alcohol-fixed and air-dried smears were prepared for Papanicolaou and Diff-Quik staining, respectively. A cell block was prepared from the ascitic effusion that contained mesothelioma cells.

A total of 151 effusions were received and evaluated cytologically over a period of 36 months.

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RESULTS

Of the total of 151 effusions received and evaluated, 26 (17.2%) were malignant: 15 pleural, 8 ascitic 3 peritoneal. Cytomorphologically, 15 were Adenocarcinomas, 5 lymphomas, 3 mesotheliomas, 2 myelomas, and 1 small cell carcinoma. These results are tabulated in tables 1, 2 and 3.

The figures illustrated are images selected from various malignancies seen during the period under review.

Table 1: Localization of malignant effusion Cytology

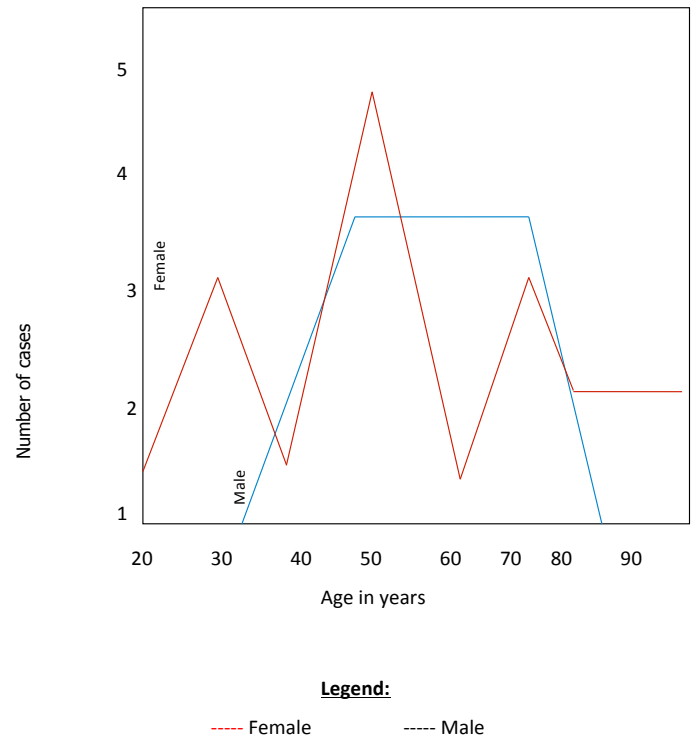
Effusion	Specimens	Benign	Neoplastic
Pleural	74	59	15
Ascitic	52	44	8
Peritoneal	23	20	3
Pericardial	2	2	0
All effusions	151	125	26

Table 2: Frequency of malignant cell types by effusion

Neoplasms	Pleural	Ascitic	Peritoneal	Pericardial	Total	Percentages
Adenocarcinoma	8	5	2	0	15	9.9
Lymphoma	4	0	1	0	5	3.3
Mesothelioma	0	3	0	0	3	2.0
Myeloma	2	0	0	0	2	1.3
Small cell carcinoma	1	0	0	0	1	0.7
Total	15	8	3	0	26	17.2

Table 3: Malignant cell types by Sex

Sex	Adenocarcinoma	Lymphoma	Mesothelioma	Myeloma	Small cell carcinoma	Total	Percentage
Female	10	3	3	1	0	17	11.2%
Male	5	2	0	1	1	9	6.0%
Total	15	5	3	2	1	26	17.2%



Graph 1: Malignant effusions by age and sex

The Graph 1 shows malignant effusions in females peaking between 30 and 40 years, 50 and 60 years and 60 and 80 years. It shows a plateau between 80 and 90 years. Simultaneously, it shows malignant effusions in males rising between 30 and 40 years and a plateau between 40 and 60 years. It shows there were male patients with malignant effusions after the age of 80 years in the cases under review.

DISCUSSION

Out of all effusions, there were 15 Adenocarcinomas, 5 lymphomas, 3 mesotheliomas, 2 myelomas, and 1 small cell carcinoma.

In pleural effusions, the most frequently diagnosed malignancies in descending order were Adenocarcinomas, lymphomas, myelomas and small cell carcinoma.

In Ascitic effusions the frequencies of malignancies were: Adenocarcinomas and mesotheliomas, in that order. The number of malignancies in women was 11.2% while in men it was 6.0%.

In this study, Adenocarcinomas constituted 9.6% of all malignant effusions; lymphomas 3.3%, mesotheliomas 2.0%, myelomas 1.3%, and small cell carcinoma 0.7%. In the majority of the malignant effusions, there was no history of previous malignancy.

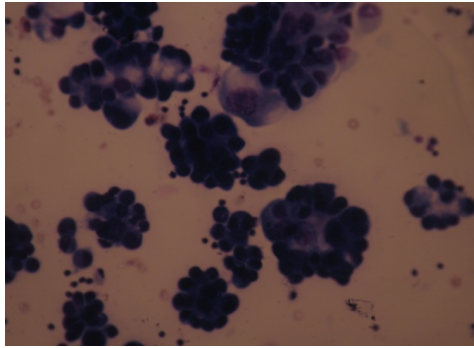


Fig. 1: Pleural effusion; metastatic adenocarcinoma
Diff Quick Stain, x 40 objective



Fig.2: Pleural effusion;Metastatic lymphoma
Diff Quick Stain, x40 objective

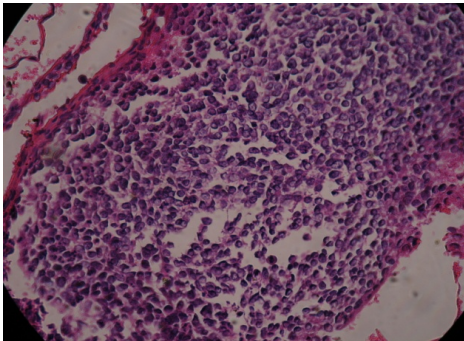


Fig. 3: Ascitic effusion; Mesothelioma;
Cell block from ascitic fluid
containing mesothelioma cells
H & E Stain, x 40 objective

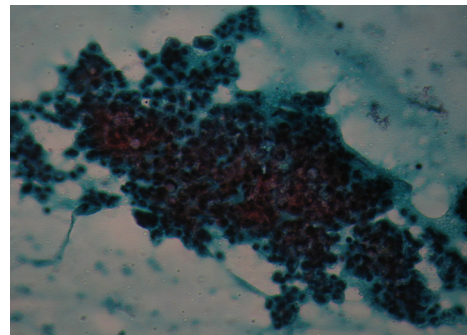


Fig. 4: Peritoneal effusion: metastatic
Adenocarcinoma displaying papillary pattern
Pap Stain, x 40 objective.

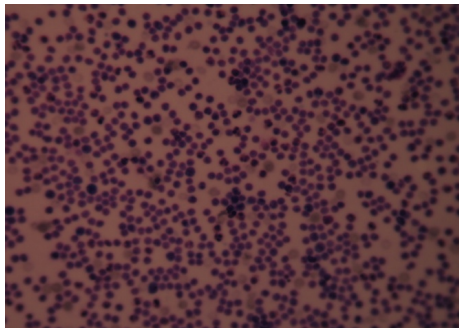


Fig.5a: Peritoneal effusion, CD 45 Positive
X 40 objective

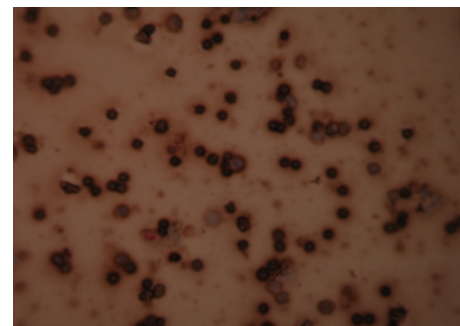


Fig. 5: Peritoneal effusion; metastatic lymphoma
Diff Quick Stain, x40 objective

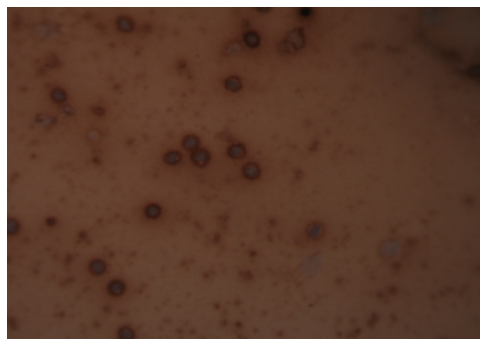


Fig.5.b: Peritoneal effusion, CD 20 Positive
x 40 objective

The findings of malignant cells in effusions were clinically important as it denoted advanced diseases, indicated poor prognosis; but helped in decisions of management.

In most cases, the primary sites of the malignancies were not determined as the patients were discharged or died.

The three mesotheliomas were diagnosed in Ascitic effusions and were primary to the peritoneal mesothelium; but their etiology could not be determined.

CONCLUSION

Malignant effusions were 17.2% and the majority were pleural and ascitic.

Malignancies in women were approximately twice that in men (11.2% vs 6.0%).

Adenocarcinomas were diagnosed more frequently in both pleural and ascitic effusions than other malignancies. The primary sites of most malignancies were not determined but were only suspected from the cytomorphology. The 17% malignant effusions in a high cost health Institution is quite high and this percentage could be estimated to be higher in a low-cost health care institution. The three cases of Mesothelioma will be further documented in a separate case report.

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REFERENCES

1. Shidham VB, Atkinson BF: Cytopathologic Diagnosis of Serous Fluids; 2007, Saunders, Philadelphia
2. Motherby H, Nadjari B, Friegel P et al: Diagnostic accuracy of effusion cytology. *Diagn Cytopathol* 1999; 20:350-7
3. Weir M.M, Bell DA: Cytologic identification of serous neoplasm in peritoneal fluids. *Cancer* 2001; 25:309-18
4. Stewart CJ, Kennedy JH: Peritoneal Fluid cytology in serous borderline Tumours of the ovary. *Cytopathology* 1998; 9:38-45
5. Soosay G.N, Griffiths M, Padaki L et al: The differential diagnosis of epithelial type mesotheliomas from adenocarcinoma and mesothelial proliferation. *J. Pathol*- 1991; 163:299-305.
6. DeBonito L, Falconieri G, Colautti I et al: Cytopathology of malignant mesothelioma: A study of its patterns and histological bases. *Diagn Cytopathol*. 1993; 9: 25-31
7. Kho-Duffin J, Tao L.C, Cramer H, et al: Cytologic diagnosis of malignant mesothelioma, with particular emphasis on the epithelial non cohesive cell type. *Diagn Cytopathol* 1999; 20:57-62.