

**ASPIRATION CYTOLOGY OF RIGHT HYPOCHONDRIAL MASSES: UTILITY AND
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ABSTRACT

The accurate diagnosis of deep seated abdominal lesions always poses a diagnostic dilemma both for the treating surgeon and the pathologist. The objective of this retrospective case series was to analyse the pathological spectrum of right hypochondrial aspirates and to evaluate the diagnostic efficacy of guided aspiration cytology for right hypochondrial lesions. This was a retrospective case series that included 105 cases of aspirations performed under radiological guidance from masses present in the right hypochondrium. The pathological analyses revealed that the aspirates were inadequate for evaluation in 24 cases (22.85%) cases. This was mainly attributed to excessive haemorrhage that obscured the morphology or cellular degeneration and debris. In 81 cases (77.27%), the smears had adequate material therefore could be evaluated on cytology. On cytological analysis, and morphology the lesions were categorised as inadequate in 22.85% (n=24), non neoplastic in 2.85% (n=3), negative for malignancy in 9.52% (n=10) and neoplastic in 64.76% (n=68). The overall diagnostic efficacy was 85.71 % with a sensitivity of 93.3% and a specificity of 100%. Cytology is a rapid, inexpensive and accurate tool for the diagnosis of right hypochondrial masses. Aspirations performed under guidance have high diagnostic accuracy that aid in rapid diagnosis and patient management.

KEYWORDS: Aspiration, Cytology, Right Hyprchondrium, Diagnostic efficacy.**INTRODUCTION**

Intra-abdominal lesions are a challenge in surgical practice. The accurate diagnosis of deep seated abdominal lesions always poses a diagnostic dilemma both for the treating surgeon and the pathologist.^[1] The diagnosis of these lesions depends on upon the use of ancillary tools like percutaneous sampling and advanced radiological imaging that have enabled the detection and localization of lesions in sites not easily accessible to surgical biopsies. Fine needle aspiration cytology (FNAC) is the most widely used method for obtaining material for diagnosis performed under radiological guidance.^[2] The abdominal organs located in the right hypochondrial region includes the liver, gall bladder, biliary tree, duodenum, head of pancreas and the hepatic flexure of the colon. The aspiration is generally performed under radiological guidance that includes computed tomography (CT) or ultrasound (USG) guidance. The choice of guidance is dependent on the size and location of the mass. FNAC is considered to be an accurate, rapid and inexpensive modality for the diagnosis of right hypochondrial masses.^[3] The objective

of this retrospective case series was to analyse the pathological spectrum of right hypochondrial aspirates and to evaluate the diagnostic efficacy of guided aspiration cytology for right hypochondrial lesions.

MATERIALS AND METHODS

This was a retrospective case series that included 105 cases of aspirations performed under radiological guidance from masses present in the right hypochondrium. The cytology records and the cytology slides were retrieved from the records. The retrieved cytology smears that were stained with either haematoxylin & eosin (H&E), May-Grünwald-Giemsa (MGG) or Papanicolaou (Pap) stains were reviewed if necessary.

The corresponding histology report was also retrieved in all cases where histopathology was available. The spectrum of pathological diagnosis along with the clinic-pathological features and the diagnostic efficacy were analysed.

RESULTS

This retrospective case series included 105 cases of right hypochondrial masses in which aspiration cytology was performed under guidance. CT scan was used as radiological guidance in 26 cases (24.76%) while USG was used in 79 cases (75.24%). The various sites of aspiration were liver in 56% (n=59), gall bladder in 40% (n=42), pancreas in 2% (n=2) and the perampullary region in 2% (n=2). The most common clinical complain was abdominal pain followed by vomiting and anorexia. The male: female ratio was 1:1.9 with an age range of 18 to 81 years.

The pathological analyses revealed that the aspirates were inadequate for evaluation in 24 cases (22.85%) cases. This was mainly attributed to excessive haemorrhage that obscured the morphology or cellular degeneration and debris. In 81 cases (77.27%), the smears had adequate material therefore could be evaluated on cytology. On cytological analysis, and morphology the lesions were categorised as inadequate in 22.85% (n=24), non neoplastic in 2.85% (n=3), negative for malignancy in 9.52% (n=10) and neoplastic in 64.76% (n=68). (Fig.1)

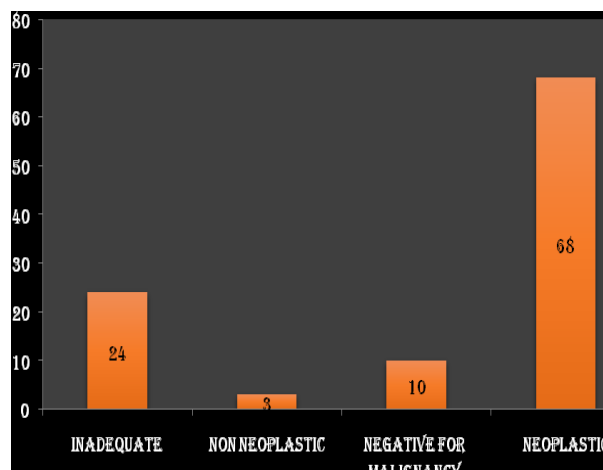


Figure 1: The distribution of the various cases based on cytological categories.

The non neoplastic lesions include 2 cases of abscess and 1 case of hydatid cyst. In 9.52% cases (n=10), the aspirates revealed normal cells and therefore these were categorised as negative for malignancy.

The lesions were categorised as neoplastic in 68 cases (64.76%). The most common neoplastic lesion was metastatic adenocarcinoma to liver in 61.76% followed by adenocarcinoma of the gall bladder in 22.05%. (Table 1) (Fig. 2-5).

Table 1: The various neoplastic lesions of right hypochondrial masses.

Diagnosis	No. of cases/%
Metastatic adenocarcinoma to liver	42 (61.76%)
Metastatic squamous cell carcinoma to liver	3 (4.41%)
Metastatic adenosquamous carcinoma to liver	1 (1.47%)
Metastatic spindle cell neoplasm	1 (1.47%)
Metastatic neuroendocrine neoplasm	2 (2.96%)
Adenocarcinoma gall bladder	15 (22.05%)
Hepatocellular carcinoma	1 (1.47%)
Lymphoproliferative disorder	2 (2.96%)
Pseudopapillary neoplasm of pancreas	1 (1.47%)

The histopathology samples and reports were available in 21 cases. The overall diagnostic efficacy was 85.71 % with a sensitivity of 93.3% and a specificity of 100%.

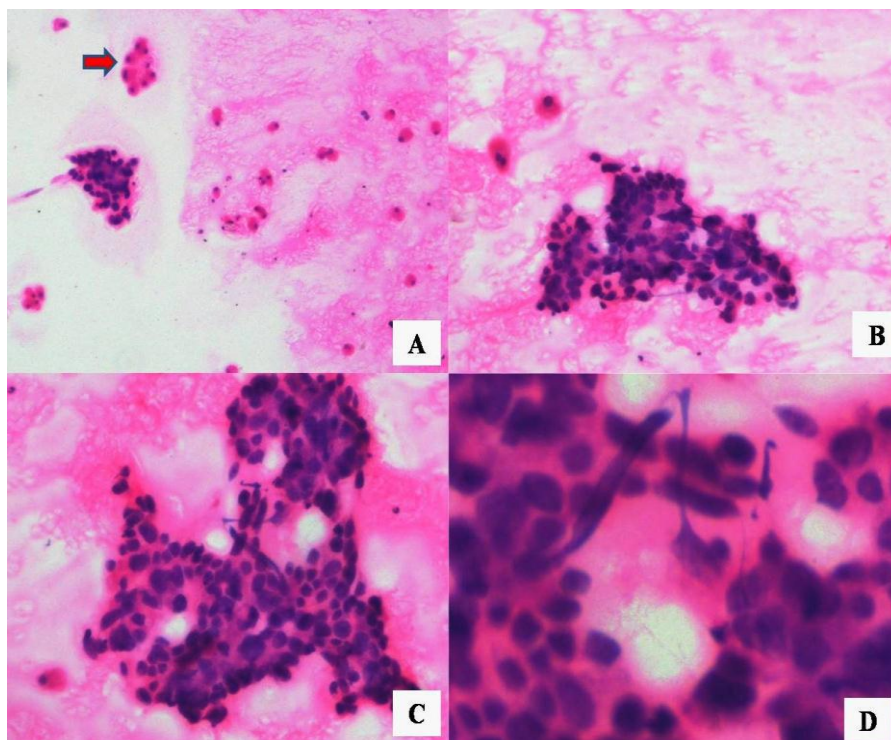


Figure 2: Liver aspirate: (A-D): Sheets and clusters of neoplastic cells with focal acinar formation and necrotic background along with scattered benign hepatocytes (Red arrow) [A=50x, B=100x, C=200x, D=400x, Hematoxylin & Eosin].

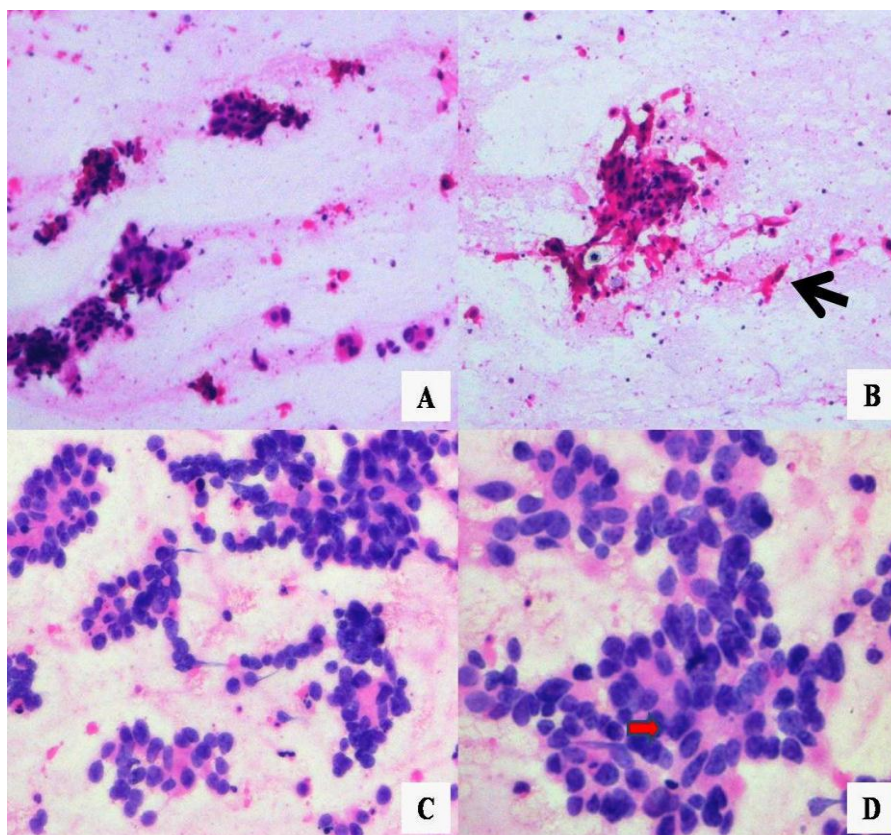


Figure 3: (A-B): Liver aspirate: Adenosquamous carcinoma with sheets of atypical cells with high nucleocytoplasmic ratio along with scattered atypical squamous cells (Black arrow) on a necrotic background [A=50x, B=100x, Hematoxylin & Eosin], (C-D): Aspirate from Liver in a case Neuroendocrine carcinoma with sheets and clusters of small cells with salt and pepper chromatin and focal rosette formation (Red arrow) [C=100x, D=200x, Hematoxylin & Eosin].

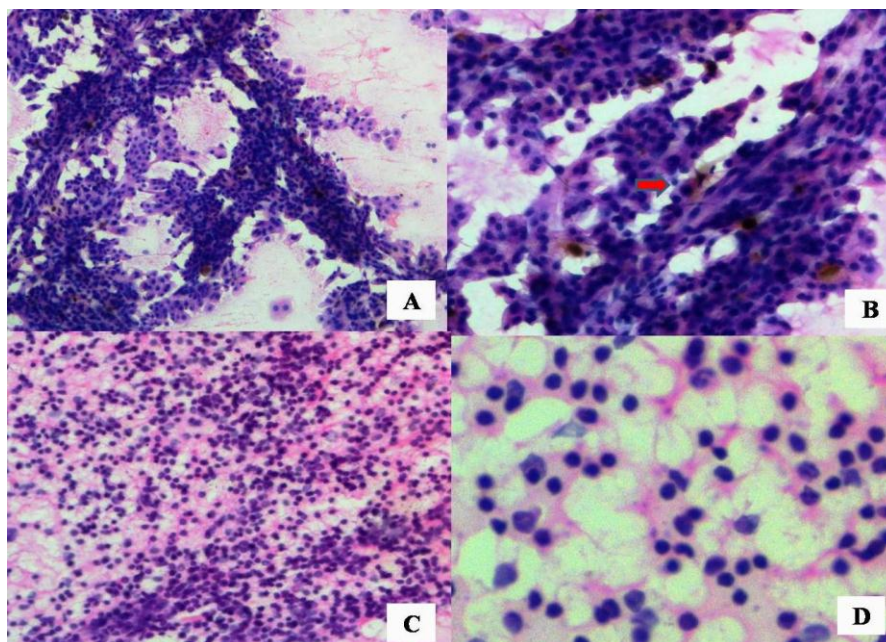


Figure 4: (A & B) Aspirate smears from Hepatocellular carcinoma with intracellular bile (Red Arrow) [A=50x, B=100x, Hematoxylin & Eosin], (C&D): Aspirate from liver in a case of Lymphoproliferative disorder (C=50x, D=100, Hematoxylin & Eosin).

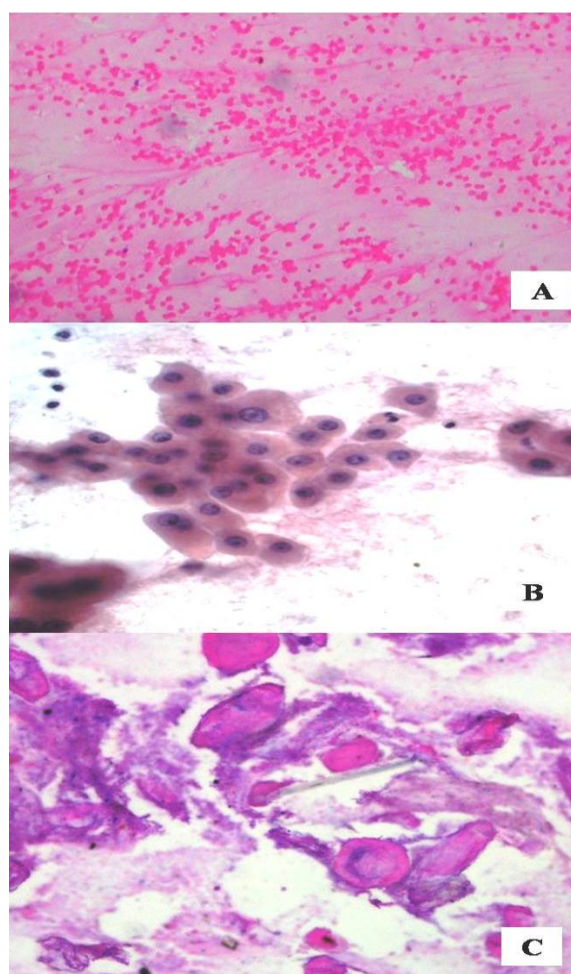


Figure 5: A: Inadequate smears due to haemorrhage, (B): Negative for malignancy: Sheets of benign hepatocytes, (C): Inflammatory lesion: Parasitic cyst (A=50x, B=100x, C=MGG) [Hematoxylin & Eosin, May-Grünwald-Giemsa].

DISCUSSION

Accurate diagnosis of abdominal lesions is essential as patient management is largely dependent on the pathological diagnosis. The clinical presentation associated with malignancy can be misleading at times.^[1]

Use of imaging techniques alone may fail to allow distinction between benign and malignant lesions on the basis of morphological features. Hence, radiologically guided minimally invasive techniques are gaining popularity as a means of diagnosing abdominal lesions with high sensitivity and low complication rates. The common complications associated with FNA include hemorrhage, septicemia, peritonitis, pneumothorax and tumor seedlings. However, the rate of complications is very low (0.5%). Cytological sampling is usually done as a daycare procedure; hence, it contributes as an additional benefit as hospitalization is avoided.^[1,2]

In this study, 22.85% cases were inadequate for cytological diagnosis. The diagnostic efficacy of cytology aspirates of intra-abdominal masses is dependent on the expertise of the radiologist. The diagnostic difficulties in accurate cytological diagnosis are due to non-representative sampling with poor cell yield, secondary inflammation, or necrotic debris. Poor fixation and cell morphology preservation also play a major role.^[3]

USG provides, real time needle visualisation with flexible patient positioning and variable imaging of the lesion while CT scan is highly recommended in small deep seated lesions where the visualisation is usually poor using USG.^[4]

The present study had a predominance of female patients which is in concordance to the study conducted by Agarwal et al. Garg et al in their study reported a predominance of males with associated right hypochondrial masses. The most common reason attributed to this is the fact that the predominant masses in the right hypochondrium as associated with gall bladder lesion.^[1] Gall bladder lesions, both inflammatory and malignant are more common in the female population.^[1]

The age range of the patients in the present study varied from 18 to 81 years. Agarwal et al reported an age range of 32 to 70 years.^[1]

The most common site of aspirate in the present study was from the liver in 56% cases followed by the gall bladder in 40 %. This finding is concordant to the study conducted by Garg et al and Agarwal et al. Chetal et al, Stewart et al and Shamshad et al also reported the most common location of masses in the right hypochondrium in the liver.^[1,2,3,4,5]

In this study, 22.85% lesions were inadequate, 2.85% were non neoplastic, 9.52% negative for malignancy and

64.76% were categorised as neoplastic. In the study conducted by Agarwal et al on cytology, 64.91% patients were found to have malignancy, 9.47% were inadequate, 18.95% were inflammatory and benign and 4.21% were suspicious. Pedio et.al in their study reported 15.28% inflammatory or benign, 4.17% inadequate and 80.55% to be malignant.^[1,6]

In studies conducted by Chetal et al, Stewart et al, Shamshad et al and Sidhalingreddy et al, the most common nature of the lesion was reported as malignant.^[3,4,5,7]

In the present study, in liver, metastatic carcinoma was most common. This finding correlated with the studies conducted by Shobha R et al and Adhikari RC et al.^[8,9] In contrast, Sidhalingreddy et al found hepatocellular carcinoma (HCC) to be more common.^[7]

In this study, the overall diagnostic efficacy was 85.71 % with a sensitivity of 93.3% and a specificity of 100%. Agarwal et al reported a sensitivity of 92.31% whereas it was 88.5% by Zargar et.al, 86.9% by Whitlach et.al.^[1,10,11] Agarwal et reported a diagnostic accuracy of 95.65% while Chetal et al reported an efficacy of 93.75%.^[1,3]

CONCLUSION

Cytology is a rapid, inexpensive and accurate tool for the diagnosis of right hypochondrial masses. Aspirations performed under guidance have high diagnostic accuracy that aid in rapid diagnosis and patient management.

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