e-ISSN: 0975-1556, p-ISSN:2820-2643

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2023; 15(4); 214-219

Original Research Article

A Study on Usefulness of Ultrasound Guided FNAC in Diagnosing Intra-Abdominal Mass Lesions

Divya K N[1], Shubha Biradar[2], Shadaksri[3]

[1,2,3]Associate Professor, Department of Pathology, VIMS, Ballari

Received: 07-02-2023 / Revised: 03-03-2023 / Accepted: 28-03-2023
Corresponding author: Dr. Divya K N
Conflict of interest: Nil

Abstract

Introduction: Ultrasound guided FNAC of intra-abdominal masses is a safe, simple, reliable and quick procedure. It avoids invasive diagnostic laparotomy and helps to choose appropriate management procedures. This study aims to assess the utility of ultrasound guided FNAC in diagnosing intra-abdominal mass lesions. The objective of the study is to evaluate the cytomorphology of different lesions of different intra-abdominal organs and to classify them as inflammatory, benign and malignant lesions.

Material and Methods: This study involved eighty patients of clinically or sonologically diagnosed intra-abdominal mass lesions. Under the ultrasound guidance FNAC was performed and slides were stained with H and E, MGG and Papanicolaou stains.

Results: Majority of the intra-abdominal masses were malignant (75%). Liver was the commonest site (60%). Hepatocellular carcinoma was the commonest tumour. The ultrasound guidance helped to procure adequate material, the diagnostic yield being 94.6%.

Conclusion: USG guided FNAC of intra-abdominal lesions is a rapid, cost effective, accurate, non-invasive and a safe diagnostic procedure. It is a valuable tool in differentiating inflammatory, benign and malignant lesions and also assists in categorizing different malignant lesions.

Keywords: FNAC, USG, Intra-abdominal mass.

Introduction

An intra-abdominal mass is an enigma in the surgical practice. [1] FNAC of the abdominal masses has gained popularity because it is safe, simple, less expensive, reliable, yields quick results and can be carried on the patient with minimum discomfort. [2] It is useful in diagnosing neoplastic as well as inflammatory conditions. It is essential for both management and staging of cancers and to rule out malignancy. It is also a substitute for surgical procedures like diagnostic laparotomy. [1]

Ultrasonography offers several advantages as a biopsy guidance system. It is readily available, relatively inexpensive and portable. It uses no ionizing radiation and it can provide guidance in multiple planes such as transverse, longitudinal and oblique. The greatest advantage is that it allows real time visualization of the needle tip as it passes through the tissue planes into the target area, thus helping in obtaining adequate sample. [2]

This study is undertaken to analyses the usefulness of ultrasound guided fine needle

aspiration cytology in the diagnosis of intra-abdominal masses.

Material and Methods

This study involved 80 cases of clinically or ultrasonographically diagnosed abdominal masses, who were referred for FNAC to the Department of Pathology, VIMS, Ballari, Karnataka, India during the period from 2019-2021. A majority of the patients presented with a mass per abdomen and some with pain in the abdomen. Detailed clinical data including the clinical history, physical examination findings were noted. Reports of relevant investigations were recorded.

The patients were subjected to a ultrasonographic evaluation to assess the origin of the mass and its relationship with the adjacent organs. A percutaneous FNAC of the mass was done under USG guidance, in the Department of Radiology. CT guidance was taken in some deep-seated lesions. A 10ml disposable plastic syringe and a 22gauge needle were used. Smears were prepared and fixed using cytofix (50% ethyl alcohol+50% diethyl ether) and stained with hematoxylin and eosin and Papanicolaou stain. Whenever required Leishman's stain, periodic acid schiff and mucicarmine stain was also used.

Results:

Of the 80 cases, 77 cases were USG guided, 3 were CT guided. Whenever aspiration was inadequate, the procedure was repeated to get good quality smears. However, in 3 cases, even after repeat aspiration, sample was inadequate. These cases are not included in the study.

Table 1: Organ-wise distribution of intra-abdominal masses

Organ	Number	Precent
Liver Precent	48	60
Gall Bladder	7	8.75
Pancreas	6	7.5
Intestine	5	6.25
Stomach	2	3.75
Ovaries	8	10
Kidney	3	3.75
Retroperitoneal Soft Tissue	1	1.25
Lymph Node	1	1.25

The age of the patients varied between 10 years and 80 years. Youngest patient of small round blue cell tumor of kidney was of 4 years and the eldest patient of metastases in liver was of 82 years. Majority of the patients (57) were in the age group of 41 to 60 years. Largest number (63%) of malignant cases were seen in the age group of 41 -60 years, substantiating the fact that cancer is affecting the younger age group in recent years. 3 adult cancer patients were younger than 40 years. 30% of cancer patients were above 60 years. Out of 80 cases 38 were males and 42 were females.

Table: 2 Cytological diagnosis of intra-abdominal lesions

Lesion	Number	Percentage
A. Liver	60	48
Non-neoplastic	6	
1. Hepatic abscess	2	
2. Tubercular granuloma	1	
3. Inflammatory	3	
Benign neoplasm	3	
Hepatocellular carcinoma	23	
Metastatic	13	
B. Gallbladder	7	9
1. Mucocele	1	
2. Adenocarcinoma	5	
3. Poorly differentiated carcinoma	1	
C. Pancreas	6	7
1. Inflammatory	2	
2. Adenocarcinoma	3	
3. Poorly differentiated carcinoma	1	
D. Stomach and intestine	7	9
Ileocecal abscess	2	
Adenocarcinoma	5	
1. Stomach	2	
2. Intestine	3	
E. Retroperitoneum – kidney, lymphnode	4	5
1. Reactive lymphadenitis	1	
2. RCC	2	
3. Small round cell tumor	1	
F. Ovary	8	10
Tubo-ovarian abscess	3	
Serus cystadenoma	2	
Malignant		
1. Serus cystadenocarcinoma	2	
2. Mucinous cystadenocarcinoma	1	

Most of the masses were located in liver (60%), followed by ovary (10%) and gall bladder (9%) A majority of the lesions were malignant (75%), followed by nonneoplastic (17.5%) and benign (7.5%) Among the non-neoplastic lesions, majority were non-specific inflammatory lesions, followed by abscesses. A case of tubercular granuloma of the liver was encountered. 7.5% of the lesions were benign tumors, consisting of hepatoblastomas and serous cystadenomas. Out of 40 cases of malignant tumors, 23 are hepatocellular carcinoma (43%). 8 out of 13 metastatic tumors were adenocarcinoma of gastrointestinal tract. Others metastasized from breast, lung, ovary, malignant melanoma and undifferentiated carcinoma. Among the 6 cases of malignancies of gallbladder, 5 were adenocarcinomas and 1 was undifferentiated carcinoma. Out of 3 malignant cases of ovary, 2 were serous cystadenocarcinoma and one was mucinous cystadenocarcinoma. Small round cell carcinoma of kidney was confirmed histopathologically as neuroblastoma.

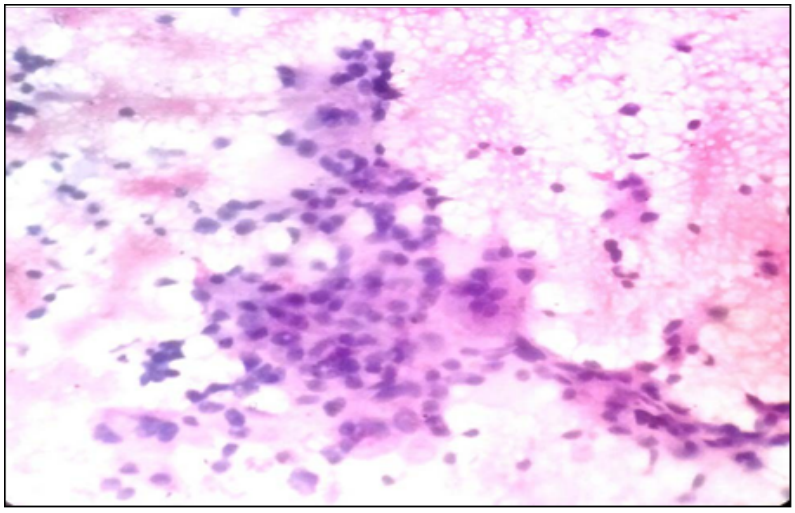

Figure 1: HCC, showing tumor cells with intra-nuclear cytoplasmic inclusions and traversing endothelial cells, H&E, X100

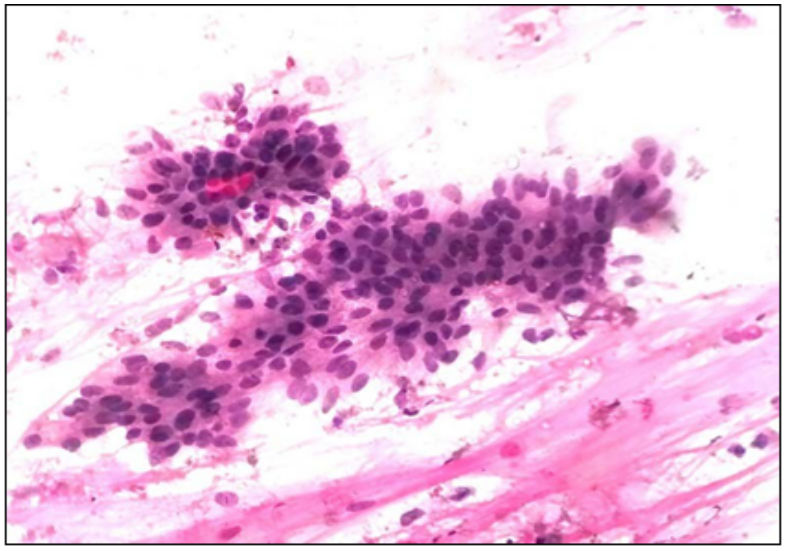

Figure 2: Metastatic adenocarcinoma Liver, showing tumor cells in clusters, mucinous background, H&E, x400

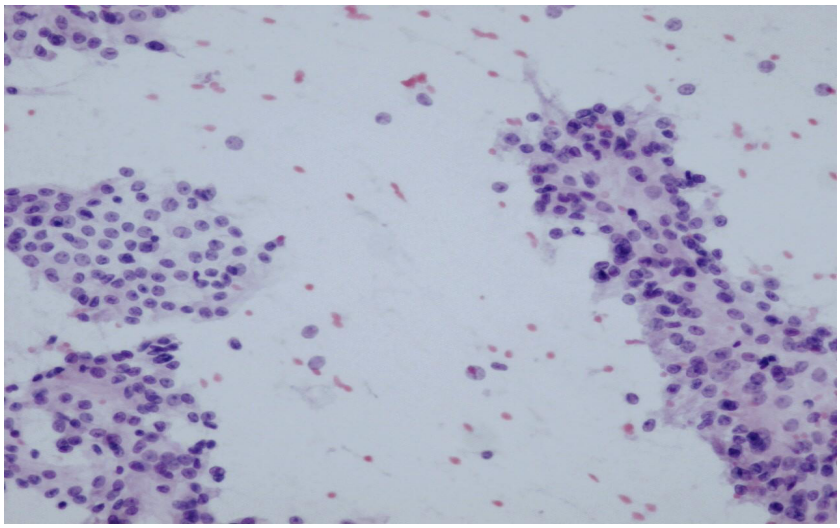

Figure 3: Renal cell carcinom -abundant clear micro vacuolated cytoplasm with ill-defined borders, H&E X 100

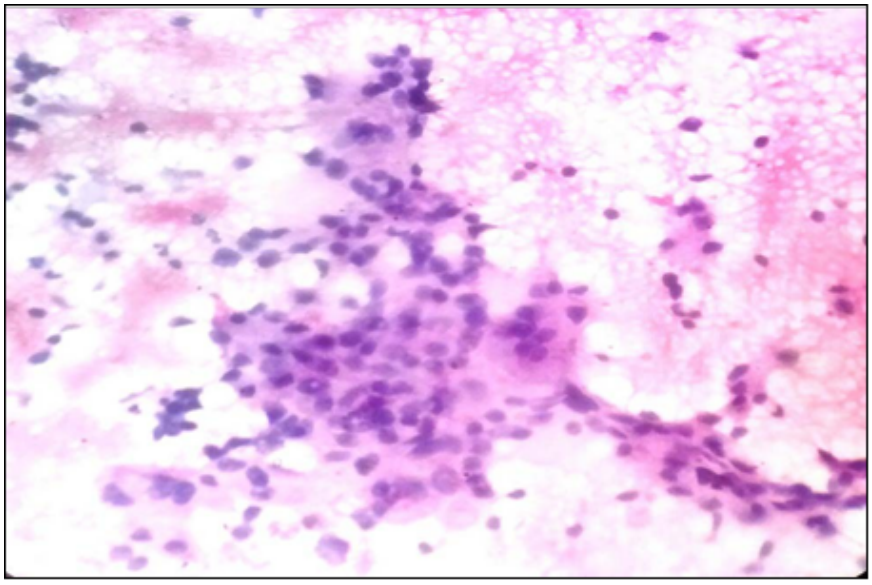

Figure 4: HCC, showing tumor cells with intra nuclear cytoplasmic inclusions and traversing endothelial cells, H&E, X100

Discussion

The diagnostic confirmation is of utmost importance for rapid and appropriate planning of management of intra-abdominal mass lesions. Differentiation between benign and malignant disease is vital, to avoid an exploratory laparotomy. As the diagnosis is rapidly available on FNAC, the appropriate medical or surgical therapies can be started early. 3 FNAC is a proven technique for the evaluation of intra-abdominal mass lesions and ultrasonography significantly increases the yield. [1]

In our study only 3 cases were inadequate, diagnostic yield being 96.4%. It is comparable to a study by Bilquis A Suleman, who reported 97.4% yield. [4] In present study we did not find any complication except mild pain at the time of needle puncture. Majority of the literature support the safety of FNAC.

Majority of the lesions were malignant (75%) which was a similar observation in all the studies done with respect to intra-abdominal masses. Among the hepatic lesions majority were hepatocellular carcinomas, which is comparable to the study of Hemalata et al [2]. But in the studies by Tasleem A R et al, majority of the cases were metastatic deposits. [1] The criteria which helped to diagnose primary tumors are sheets of cells with endothelial lining and polygonal cells with granular or vacuolated cytoplasm. (Figure 1) The metastatic tumors of gastrointestinal tract showed acini and papillae of malignant cells with nuclear palisading. (Figure 2) It was difficult to distinguish between well differentiated HCC from the regenerating nodules. The absence of bile duct epithelium in a cellular smear and naked nuclei helped in diagnosis of malignancy. Inflammatory lesions and abscesses predominated non-neoplastic lesions of liver. [5] A case of tuberculosis of liver was reported, helping the clinician to overcome the diagnostic challenge.

Adenocarcinomas of gall bladder and pancreas were easily picked up by FNAC. Virtually all organs of the retroperitoneum are accessible to fine needle aspiration biopsy with radiologic guidance.3 In the present study it was observed that the main drawback of FNAC in retroperitoneal lesions was that the sampling could be performed only on parts of the tumour, the structure of which was different in different fields. The same thing was observed by many authors. 2 Among the renal lesions majority were renal cell carcinomas,(Figure

3) this is same as the observation made by Sobha R G. [6]

Among the ovarian lesions, 37.5% were malignant lesions. a similar observation is made out in a study done by Adhikari et al, with 35.7% of malignant lesions. [7] But in a study by Sobha R G et al malignant tumors constituted 58.3%. [6] 3 cases of tubo-ovarian abscess and 2 cases of serous cystadenoma were encountered. [8]

Conclusion

USG guided FNAC of intraabdominal lesions is a rapid, cost effective, accurate, non-invasive and a safe diagnostic procedure. It helps to avoid unnecessary, expensive and invasive diagnostic procedures. Ultrasonography and computed tomography can significantly increase the chances of successful aspiration and reduce the likelihood of complications in intra-abdominal lesions. It is a valuable tool in differentiating inflammatory, benign and malignant lesions and also assists in categorizing different malignant lesions. As the first line investigation, it is not only useful in the diagnosis of deep seated lesions, but also helps in choosing the appropriate management.

References

1. Tasleem A R, Summayia F, Isma N, Bhat N, Siddique A, Khanday S. USG guided fine needle aspiration cytology of intra-abdominal and pelvic masses in Kashmir: A study at tertiary care hospital. Int J Med Res Health Sci. 2016, 5(4):169-175.
2. A L Hemalatha, Sindhuram V S, Sushma S, Suma J K, Varna I, Aditya A. Ultrasound guided FNAC of abdominal-pelvic masses-the pathologists perspective. J Clin Diagn Res. 2013 Feb;7(2):273-77.
3. Gupta, V, Dubey, S. Role of Image-Guided FNAC and Biopsy in Intra-abdominal and Pelvic Masses. National Journal of Laboratory Medicine. 2021; 10(1): 34-39.
4. Soleman B A, Atif N, Ahmad S, Chughatai N. Analysis of 210 Cases of Radiologically Guided FNAC of Intraabdominal Masses. Proceeding S.Z.P.G.M.l. vol: 18(1): 35-44, 2004.
5. Orell SR, Sterret GF, Walter MU. Manua! and atlas of fine needle aspiration cytology. New York Church ii Living stone, 1992.
6. Sobha R G, Faheem M K, Prasad S B, Reddy S E. Efficiency of ultrasound guided aspiration cytology in deep seated lesions - a diagnostic evaluation. Int J Med Health Sci. January 2012;1(1): 2-12
7. RC Adhikari, A Tuladhar, S Shrestha, S K Sharma.Deep-seated thoracic and abdominal lesions: usefulnessof ultrasound guided fine needle aspiration cytology, a 3-year experience. Nepal Med Coll J. 2010;12 :20-25.
8. Chakdoufi S., Moumen A., & Guerboub A. Dyslipidemia and Diabetic Retinopathy in Moroccans Type 2 Diabetics Patients: A Cross-Sectional Study. Journal of Medical Research and Health Sciences, 2023; 6(3): 2471–2479.