

## ORIGINAL RESEARCH

# To correlate USG-guided FNAC of the liver with cytopathological diagnosis

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### ABSTRACT

**Aim:** The aim of this study is to correlate USG-guided fnac of the liver with cytopathological diagnosis. **Material and Methods:** This is a prospective research that includes a total of one hundred different instances of liver lesions that were identified either clinically or radiologically. In each and every one of the instances, an abdominal ultrasound was performed. The echogenicity of the liver lesions was analyzed, and they were classified as either solitary, numerous, or diffuse. **Results:** There were a total of one hundred cases. Diagnosis was attainable in 92 out of 100 instances, resulting in a diagnostic yield of 92%. The great majority of 80 patients (80%) were diagnosed with malignant liver aspirates. The main malignant liver lesions accounted for 42 of these 80 instances, which is 52.5% of the total. 39 of these instances were hepatocellular carcinoma, while the other two cases were primary NHL. There were a total of 40 cases. 31 of the 39 cases of HCC had a single site of origin (SOL), whereas 8 of the cases had multiple sites of origin (SOL). Nine of the patients in the metastatic carcinoma group had a single lesion, whereas the other thirty patients had numerous lesions. Both instances of NHL manifested themselves as having many foci of disease. A good correlation was found between the ultrasound diagnostic and 74 out of 92 instances. **Conclusion:** Cancerous tumors were the most prevalent kind of liver lesion, and the prevalence of primary and metastatic liver tumor deposits was comparable. In the majority of the instances, HCC was found to be a single lesion, and deposits were shown to be associated with several SOLs.

**Keywords:** Fine Needle Aspiration Cytology, Ultrasound, SOL, Hepatocellular Carcinoma, Metastatic

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### INTRODUCTION

The pancreas, the biliary system, and the liver are three organs that are commonly affected by cancer. It is possible for the liver to be affected by metastases, original benign or malignant neoplasms, as well as other disorders that are not related to cancer. As a method for identifying hepatic abnormalities, the use of minimally invasive methods that are performed under radiological supervision and with pathological correlation is becoming more common. As a result of the fact that radiology does not always provide an accurate characterisation of the lesions, cytological diagnosis is often necessary in order to direct further therapy. [1] Performing a biopsy on a pancreatic tumor exposes the patient to the possibility of bleeding and infection, and it is difficult to distinguish this condition from pancreatitis. [2]Tumor indicators such as alpha-fetoprotein (AFP) have the potential to be beneficial, but it is possible that they will not be elevated in all instances when they are first presented. As a result, the diagnosis is almost always contingent

upon a tissue diagnosis. [3] Fine needle aspiration cytology, often known as FNAC, is a procedure that may be used for the identification of mass lesions in the pancreas and the hepatobiliary tract. This approach is both quick and very affordable. FNAC is quickly becoming one of the most widely used diagnostic techniques since it has a relatively low risk of complications and a high degree of sensitivity. [3,4]

### MATERIAL AND METHODS

This is a prospective research that includes a total of one hundred different instances of liver lesions that were identified either clinically or radiologically. In each and every one of the instances, an abdominal ultrasound was performed. The echogenicity of the liver lesions was analyzed, and they were classified as either solitary, numerous, or diffuse. Before FNAC, all of the patients had to first undergo BT, CT, and PT. FNAC was carried out with the assistance of ultrasonography, using either a 22-gauge needle or a

spinal needle. The needle was inserted percutaneously into the lesion under ultrasound guidance, with aseptic precautions taken, and the patient was instructed to maintain suspended breathing during the procedure. Between one and three passes were completed. After a sufficient amount of material had been sucked into the hub of the needle, the suction pressure was let up, and the needle was then removed. The material that was aspirated was used to make smears. Only a few of the slides were promptly fixed in alcohol at 95% and stained with H&E. For the Wrights stain, smears were made and allowed to air dry. A closer look was taken at stained streaks.

## RESULTS

USG FNAC was conducted on a total of one hundred instances. Patients' ages varied from 25 to 78 years old, with a mean age of  $51.85 \pm 6.25$ , and there were a total of 60 male cases and 40 female cases, making for a male to female ratio of 1.5:1.

One instance (one percent) of simple hepatic cyst, two cases (two percent) each of inflammatory, cirrhosis, and regenerative hyperplasia, eighty cases (eighty percent) were malignant, and one case (one percent) was suggestive of malignancy because it contained a few atypical cells against a hemorrhagic backdrop. There were a total of one hundred cases. 12 (12%) of the cases could not be resolved because they only comprised a few scattered hepatocytes and blood cells. Therefore, a diagnosis was attainable in 92 out of 100 instances, resulting in a diagnostic yield of 92%.

The great majority of 80 patients (80%) were diagnosed with malignant liver aspirates. The main malignant liver lesions accounted for 42 of these 80 instances, which is 52.5% of the total. 39 of these instances were hepatocellular carcinoma, while the other two cases were primary NHL. There were a total of 40 cases.

There were a total of 38 instances (47.5%) of metastatic tumors, and adenocarcinoma deposits were found in 33 of those cases. The adenocarcinoma deposits originated from a variety of locations, including the colon (7 cases), breast (6 cases), stomach (3 cases), gallbladder (2 cases), renal cell carcinoma (2 cases), pancreas (1 case), and testis (1 case). Primary was not determined in 12 of the instances. Deposits of squamous cell carcinoma were found in four instances, with one case coming from the oral cavity, one case coming from the tongue, one case coming from the oesophagus, and one case coming from the lung. There was revealed to be one incidence of lymphoma deposit in the liver.

31 of the 39 cases of HCC had a single site of origin (SOL), whereas 8 of the cases had multiple sites of origin (SOL). Nine of the patients in the metastatic carcinoma group had a single lesion, whereas the other thirty patients had numerous lesions. Both instances of NHL manifested themselves as having many foci of disease.

A good correlation was found between the ultrasound diagnostic and 74 out of 92 instances. The cytological diagnosis and the ultrasonography diagnostic of 18 different instances of hepatic lesions were found to be inconsistent with one another. In 5 instances, ultrasonography revealed that the patients really had hepatocellular carcinoma in 4, cirrhosis in 1, and inflammatory disease in 2. Two of the cases were misdiagnosed as having metastatic deposits. Two reported cases of hydatid cyst were found to be straightforward hepatic cysts. Two instances that were questionable for malignancy turned out to be HCC, while three cases that were classified as abscess turned out to be lymphoma or HCC. Therefore, ultrasound may provide both false negative and false positive findings for the detection of cancers.

**Table 1: FNAC diagnosis of liver aspirates**

Type of Aspirates	No of cases	%
Inflammatory lesion	2	2
Regenerative hyperplasia	2	2
Cirrhosis	2	2
Simple hepatic cyst	1	1
Suspicious of malignancy	1	1
Malignant aspirate	80	80
Inconclusive	12	12
Total	100	100

**Table 2: Malignant aspirates**

Malignant aspirates	Number	Percentage
Primary Malignant Lesions	42	52.5
HCC	39	92.86
Well differentiated	16	41.03
Moderately differentiated	20	51.28
Poorly differentiated	3	7.69
Primary NHL	3	7.14

Metastatic deposits	38	47.5
Adenocarcinoma	33	86.84
Squamous cell carcinoma	4	10.53
Lymphoma deposits	1	3.03

**Table 3: USG findings in malignant aspirates:**

	Total	Solitary SOL	Multiple SOL
HCC	39	31 (79.49%)	8 (20.51%)
Metastatic carcinoma	39	9 (23.08%)	30 (76.92%)
NHL	2	0	2 (100%)

**Table 4: Correlation and discrepancies in FNA and US findings**

Lesions	FNA diagnosis	US Correlation	Discrepancies
Metastasis	39	35	4
HCC	39	34	5
Simple cyst	2	0	2
Abscess	4	2	2
Cirrhosis	4	3	1
Lymphoma	4	0	4
Total	92	74(80.43%)	18(19.57%)

## DISCUSSION

Hepatic disorders are frequent in our surroundings. It affects people of all ages, however the highest incidence occurs between the ages of 50 and 60 [4]. Patients in this research varied in age from 25 to 78 years old, with a mean age of 51.85 years, which is comparable to the findings of Franca et al [5]. The male to female ratio was 1.5 to 1, indicating a masculine preponderance. Male majority was detected by Franca et al. [5] and Gatphoh et al. [1], however a little female prevalence was observed by Siddalinga reddy et al. [6]. Similar to the findings of the research by Rasanía A et al [7], the neoplastic lesions were more prevalent between the ages of 40 and 70, while the non-neoplastic lesions were more prevalent between the ages of 28 and 69. The cytomorphological specifics were analyzed in the same way as Cohen et al. [8] described them.

A normal liver would show as having uniform echogenicity with a smooth liver surface and vascular boundary when it is imaged via ultrasonography. The border of a fatty liver is rounded, and it has enhanced echogenicity and diminished vascular architecture. Cirrhosis will have a surface that is uneven and nodular and will have an inhomogenous echo texture. There is a possibility that HCC and metastatic deposits will share characteristics. HCC manifests as a lesion that is either isoechoic, mildly hypoechoic, or hyperechoic. Deposits of metastatic disease often have a target-like appearance, although they may also have a hypoechoic bulk or mixed echogenicity. Therefore, the outward manifestations might vary. The majority of necrotizing tumors have a diverse appearance, while NHL manifests as hypoechoic lesion [9,10].

Because tumor masses, whether primary or secondary, go through substantial necrosis, the consequent

radiologic picture of the cavitory neoplasm imitating abscesses. Additionally, abscesses are accompanied with reactive proliferative changes, which makes radiologic separation from a neoplastic process practically difficult. Here, aspiration cytology or FNAB plays a vital role, and ultrasonography helps ensure correct sampling and, therefore, proper yield of material, both of which will contribute to an accurate diagnosis [11].

The primary indication for FNAC of the liver, as mentioned by Rasanía A et al. in 2007, is the presence of a single or many nodular lesions, which may be palpated, nuclear scanned, CT scanned, or USG scanned. The FNAC test is a very helpful diagnostic technique for a wide variety of liver conditions. It provides precision while avoiding severe issues, just requires minor intervention, and is quite inexpensive [7].

In the current research, the ultrasound examination revealed a single space occupying lesion in 39 of the instances, as well as numerous or multifocal lesions in 39 of the cases. While Swamy MCM et al. [12] in their investigation identified solitary lesions (51.38%) in almost half of his patients, they also observed multifocal lesions in 26 (36.12%), widespread parenchymal disease in eight instances (11.12%), and normal echogenicity in one case (1.38%).

In the current investigation, cancerous lesions were identified the majority of the time, which is consistent with the findings of Khurana et al [13], Ramadas et al [3], and Sapna Goel et al [14]. On the other hand, Gatphoh et al [1] discovered that the incidence of neoplastic and non-neoplastic lesions was about equal. Isolated SOLs were found in 80% of instances of head and neck cancer and 25% of cases of metastatic deposits, which is the same percentage as was described by Ahuja A et al [15].

In the current investigation, seven percent of the patients were classified as having non-neoplastic lesions. Pyogenic abscess accounted for two of the cases (two percent), widespread parenchymal disease in the form of cirrhosis and regenerative hyperplasia accounted for two of the cases (two percent), and a simple hepatic cyst accounted for one of the cases (one percent). The patients that were identified as having widespread parenchymal illness in the form of cirrhosis and regenerative hyperplasia exhibited a variety of findings, including degenerative changes, reactive changes, inflammation, fibrosis, and fatty change. The diagnoses were given because of the presence of cirrhosis.

While Khurana et al. [13] and Salamao et al. [16] and Ceyhanet al. [17] identified malignant lesions mostly with a few benign lesions, the current investigation found that all neoplastic lesions in 80 cases (80%) were malignant. This is the same as that discovered in the present study by Khurana et al. [13]. These data suggest that malignant lesions were detected with very little difficulty in ultrasound-guided fine needle aspiration cytology smears, in comparison to benign lesions and other types of non-neoplastic lesions.

In the current investigation, out of the 80 instances of malignant lesions, primary hepatic tumors made up 42 cases (representing 52.5%), whereas the remaining cases (representing 47.5%) were secondary metastatic lesions. Ceyhan et al. [17] made findings that were quite similar to these ones, and they found that secondary metastatic tumors made up 51.65% of the most prevalent malignant liver lesions.

On ultrasound guided fine needle aspiration cytology of the liver, hepatocellular carcinoma was shown to be the most common primary hepatic malignancy. This condition was identified in 39 of the patients. The early detection of HCC seems to be of critical relevance in light of the good diagnosis in certain people in whom it may be removed surgically, since this highlights the significance of the situation. According to a number of investigations, the diagnostic accuracy of FNAC in the precise diagnosis of HCC was around 87.18 percent. The majority of investigations, including the one being presented here, came to the same conclusions. In this particular investigation, a total of 2 cases of primary NHL were identified. According to the majority of research, cholangiocarcinoma was the second most prevalent form of primary hepatic malignancy. On the other hand, malignant lymphoma and hemangioendothelioma were the least common forms of primary malignant lesions.

According to the findings of the majority of research, including the current one [12,14], the most common kind of secondary hepatic tumor is called a metastatic adenocarcinoma. It was found that adenocarcinoma-like characteristics were present in metastatic deposits in 89.74% of the cases, which is comparable to what Rasania A et al [7] found. According to the findings of MCM Swamy et al. [12], the most prevalent place

affected by malignancies was the colorectal region. Two instances of RCC deposits very similar to those described by Pinto et al. [18] were found. Therefore, ultrasound and ultrasound-guided FNAC may be coupled for the diagnosis of SOL of liver in order to increase the diagnostic accuracy of this condition.

## CONCLUSION

Cancerous tumors were the most prevalent kind of liver lesion, and the prevalence of primary and metastatic liver tumor deposits was comparable. In the majority of the instances, HCC was found to be a single lesion, and deposits were shown to be associated with several SOLs. Because nonneoplastic and neoplastic lesions display overlapping characteristics on radiological examination, cytomorphological investigation by FNAC is necessary to boost diagnosis accuracy.

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