

## Safety And Usefulness Of FNAC In Hepatobiliary Tumors

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Cytological diagnosis is quite helpful in planning the management of many neoplastic disease. FNAC is routinely employed in the diagnosis of breast and thyroid diseases. With ultrasonographic (USG) and computerised tomography (CT) guided FNAC, deep seated lesions are being diagnosed more accurately and frequently. A prospective study was conducted in a major teaching hospital to evaluate usefulness and safety of FNAC in hepatobiliary tumours. A total of 20 patients where hepatobiliary malignancy was suspected clinically and supported by USG or CT scan were subjected to FNAC under USG. FNAC was performed with 22G needle under the guidance of USG. Results were evaluated in terms of cellularity of the aspirate (good, poor and inconclusive), successful cytological diagnosis and complications of the procedure. It was successful in 10 out of those 14 cases of liver masses. Eight had hepatocellular carcinoma, one was metastatic sarcoma and one patient had pyogenic abscess. In case of gallbladder tumors only one case could not be diagnosed because aspirate contained normal hepatic tissue only. In 5 cases diagnosis of adenocarcinoma was confirmed. Fifteen out of these 20 cases were having obstructive jaundice and a deranged coagulation profile to various extents, which was corrected prior to FNAC proceeding to the procedure where ever needed. Only 2 patients developed pain at the site of puncture, which settled with analgesics. Two patients had minor bleeding and one of them developed a small hematoma around the point of puncture. This also settled with conservative management. None of the patients had any major complication like biliary peritonitis. Overall sensitivity of the procedure was 75 percent and there was no significant complication associated with it rendering the procedure a safe and effective method of diagnosing the hepatobiliary tumors.

**Key Words:** FNAC, hepatobiliary tumors, Ultrasonography.

Fine Needle Aspiration Cytology (FNAC) is a method of obtaining a representative specimen from a lesion with the help of a thin bore needle by applying suction and making smear for the cytological examination<sup>1</sup>. This method of cytology developed in Scandinavia some thirty years ago has become popular in Europe and North America in the last decade<sup>2</sup>.

Use of thin needle (22 gauge to 25 gauge) virtually assures an atraumatic procedure that is acceptable to the patient. The material aspirated consists of single cells and cell clusters, and the yield may number in the thousands. When an epithelial tumor is the target, the entire smear most often will consist of tumor cells, generally intact. The diagnosis of an aspiration smear very often can be made at a glance or after a brief perusal by an experienced cytopathologist.

The cell clusters obtained on aspiration may present structural formations such as alveolar groups, cell balls, monolayers and papillary projections which allow tumor typing in many cases. In fact the material is a microbiopsy with a high level of correlation with histopathology<sup>3</sup>.

This technique allows the clinician to extend the examination into the palpable and impalpable lesion producing part or all of the syndrome for which the patient has sought help. It allows the clinician to complete the examination at one patient encounter without the necessity of a return visit, referral to a remote specialist, or scheduling operating room time, all of which frustrate the patient and heighten his anxiety<sup>4</sup>.

There has been an increasing use of fine needle aspiration cytology in surgical practice during the last decade and benefits in terms of patient management which

have occurred from this are undoubted<sup>5</sup>. Failure to incorporate this method into major oncologic clinics is a curious omission in this modern era<sup>6</sup>.

Not so long ago it was used for superficial palpable lumps only. Its use in the cytological diagnosis of breast and thyroid conditions has already become a routine. With the easy availability of USG, CT and other imaging investigations, deep seated swelling are detected more accurately and frequently. Clinicians are eager to find out the new means to reach the cytological diagnosis of these conditions without inflicting much harm to the patients. This is also true in case of the hepatobiliary tumors.

Application of fine needle aspiration cytology in diagnosing the cause of obstructive jaundice is somewhat different from its use in other diseases. It has got its relative contraindications<sup>6</sup>. The patient with obstructive jaundice may bleed excessively because of hypoprothrombinaemia. This predisposition to the hemorrhage is a particular threat to the person who may require surgery<sup>7</sup>. Bleeding diathesis in obstructive jaundice can be corrected by administering vitamin K to the patient before intervention by bringing his bleeding profile to near normal<sup>8</sup>.

The second hazard albeit slight, is of bile leak and bile peritonitis. Sudden pain and muscle guarding immediately after the puncture is indicative of this eventuality. With supportive therapy, fluids and antibiotics, the outcome should remain benign in case this complication occurs<sup>9</sup>. Other untoward effects which must be considered are infection, seedling of the needle pathway, tumor dissemination, arterial hemorrhage and thrombosis<sup>9</sup>.

In our country, however, the matter available on this subject is relatively scarce. For this reason, a study, particularly relevant to the usefulness and safety of the FNAC in hepatobiliary tumors was conducted at Mayo Hospital Lahore.

### Materials and Methods

Those patients were included in the study, who had a tumor involving the liver or biliary system diagnosed by some imaging investigation. Their investigations done were CBC, platelet count, urinalysis, blood urea, blood sugar, serum bilirubin, alkaline phosphatase and coagulation screening. Patients with deranged findings were given appropriate treatment before subjecting them to FNAC. Patients with jaundice who had abnormal coagulation profile, were given Vitamin K injections and fresh frozen plasma transfusion as indicated.

Aspiration of the lesions were done under ultrasound guidance in local anesthesia after taking all aseptic measures. A needle of 22G on a 10ml syringe was used for aspiration. Smear was prepared through air dry method and sent for histopathology. Patient was kept under observation for 48 hours after the procedure. Monitoring of pulse, blood pressure, temperature, respiratory rate, bleeding from the puncture site, abdominal pain and tenderness was done.

### Results

Total 20 patients were subjected to FNAC. All had a tumor in the liver or biliary system, diagnosed on ultrasonogram or CT scan. Their age distribution and presenting complaints are summarised in Table 1 and 2.

Table 1: Presenting complaints. n=20

Symptoms	n=	%age
Pain abdomen	17	85
Jaundice	15	75
Fever	10	50
Abdominal mass	10	50
Itching	8	40
Weight loss	8	40

Table 2: Break-up of the patients according to age.

Age in years	n=	%age
13-30	2	10
31-40	3	15
41-50	6	30
51-60	5	25
61-70	3	15
Over 70	1	5

Over all success of the procedure was 75% (15 out of 20 cases). In case of liver tumors it was 71% (10 out of 14 patients) and 83% (5 out of 6 case) in gallbladder lesions.

In fourteen patients (male=9, female=5) with lesions in the liver, FNAC was performed with success in 10 cases. Eight had hepatocellular carcinoma, one was metastatic sarcoma and one patient had pyogenic abscess.

Failure occurred in 4 cases. In one patient it was because of poor cellularity of the smear and second smear contained only acellular material. The two other smears contained only RBCs and no hepatic tissue.

Six patients (male=3, female=3) had tumors in their gallbladders. FNAC was successful in 5 of them. They were suffering from adenocarcinoma of the gallbladder. In one case the smear consisted of only normal hepatic tissue and there were no cells from the tumor. Table 3 and 4 gives the details of the cellularity and interpretation of the smears.

Table 3. Cellularity of the smears.

Site of lesion	Good	Poor	Irrelevant
Liver	10	2	2
Gallbladder	5	-	1
Total	15	2	3

Table 4: Results of FNAC.

Diagnosis	liver	%age	GB	%age
Malignant	9	64	5	83
Benign	01	07	-	-
Inconclusive	04	29	1	17
Total	14	100	6	100

Only 2 patients developed pain at the site of puncture, which settled with analgesics with in a day. Two patients had minor bleeding from the site of puncture, bleeding settled with gentle pressure dressings. One of them developed a small hematoma around the point of puncture. This also settled with conservative management. None of the patients had major complication like biliary peritonitis. Table 5.

Table 5: Complications of FNAC.

Complication	n=	%age
Pain	02	10
Bleeding	02	10
Hematoma	01	05
Biliary peritonitis	00	00

### Discussion

Fine Needle aspiration can obtain cells from almost any site of the body. In proper hands it is a safe and often painless method. As long as the needle is correctly positioned in the target tissue the aspirated specimen will generally contain an abundance of highly diagnostic cells<sup>10</sup>.

Various organs in the abdomen may be investigated safely and accurately with transabdominal percutaneous fine needle aspiration. The presence of a abdominal mass no longer necessitates an exploratory laparotomy for diagnosis only. With ultrasonic, fluoroscopic or computed tomography guidance, almost every organ and region of the abdomen can be sampled with minimal complications<sup>11</sup>.

In case of hepatobiliary tumors the aspirated material may contain various normal hepatic, biliary duct and Kupffer

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cells mixed with sheets of cells from the various tissues perforated by the needle (mesothelium, striated muscle, capillaries). Diagnosis of primary hepatocellular carcinoma is very difficult by cytology alone, if the tumor is well differentiated<sup>12</sup>. The tumor cells resemble reactive, benign hepatocytes except for their size enlargement, loss of cohesion and overcrowding. It is almost impossible to use cytology alone to differentiate an anaplastic primary liver cancer from other anaplastic, metastatic cancers.

In metastatic tumor the diagnosis is usually easy. The "alien" tumor cells often show no resemblance to the benign hepatic cells. Some difficulties may arise when the metastatic tumor cells are necrotic and the cytologist tries to interpret shadows of cells. Another pitfall is possible over diagnosis of regenerating benign liver cells with enlarged nuclei and prominent nucleoli<sup>11</sup>.

Ten out of 14 patients (71%) suffering from liver tumors were targeted successfully. The success in these cases when compared to 84.3% of the study done by Sole M, Calvet X, Cuberes T, et al in 1993 at University of Barcelona Medical School, Spain, was 13% less<sup>13</sup>. Out of the 20 patients subjected to the FNAC 6 had gall bladder tumors. Five cases (83%) were found to have malignant lesions.

The sensitivity of FNAC for the gall bladder tumors in this study was thus 83%. Carcinoma of gall bladder is a rare condition that is frequently difficult to diagnose preoperatively<sup>11</sup>. These results are comparable to 88% sensitivity in the study by Akosa AB, Barker F, Desa L, Benjamin T and Krausz T at Royal Postgraduate Medical School, Hammersmith Hospital, London in 1995. cytologic diagnosis is helpful in planning the surgical management of carcinoma gall bladder and a wider application of FNAC is recommended in such cases<sup>14</sup>.

Only two patients (10%) experienced pain at the puncture site, which was relieved with analgesics. Two patient had mild bleeding from the site of puncture and one patient developed small hematoma, which resolved with conservative management. One can compare these results to the results of the study done by Wu-SS, Link KC, Soon MS and Yeh KT at Changhua Christian Hospital, Taiwan in 1996. Out of 17 patients subjected to FNAC only one patient suffered from mild biliary peritonitis. They suggested in the light of their results that FNAC is a safe and accurate procedure for the diagnosis of gall bladder lesions<sup>15</sup>. In our study no patient developed biliary peritonitis leading us to a similar conclusion. FNAC is a simple, effective and safe procedure. Its increasing popularity is indication of this fact. It is recommended that FNAC should be the first choice of

invasive technique in the assessment of hepatobiliary focal benign or malignant tumors<sup>16</sup>.

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