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RESEARCH ARTICLE

ULTRASOUND-GUIDED FINE-NEEDLE ASPIRATION CYTOLOGY IN GALL BLADDER LESIONS: A RETROSPECTIVE STUDY IN TERTIARY CARE CENTER

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Abstract

Gallbladder carcinoma is the one of the most common malignancy, comprising of 80–95% of biliary tract cancers. Ultrasonography-guided fine-needle aspiration cytology (USG-FNAC) seems to an effective diagnostic the tool for the accurate diagnosis of gallbladder lesions, however data on its diagnostic utility and cyto-morphological categorization of gallbladder lesions are still lacking.

Aims: To study the diagnostic usefulness of USG-FNAC in gallbladder lesions.

Materials and Methods: This is retrospective study, done in tertiary health care center in which USG FNC diagnoses were correlated with histo-pathological and clinical follow-up, to assess the diagnostic accuracy. A total of 104 USG -FNCs that were performed between 1st of January 2018 to 31st of March 2022 were reviewed.

Results: Out of 105 cases, n=21 cases (10.5%) were -inadequate/non-diagnostic.The mean age was 52 years, with a range of 44–78 years. Women predominated over men (Male:Female=1:2). Primary adenocarcinoma of the gallbladder was most common. On cyto-histological correlation, the sensitivity, specificity, and diagnostic accuracy of USG-FNAC of gallbladder lesions were found to be 97.82, 89.23, and 98.31%, respectively.

Conclusion:USG FNAC techniques ensures satisfactory diagnostic accuracy specially in malignant conditions of gallbladder lesion. Other advantages are such as minimum invasiveness, rapidity, and cost effectiveness. Hence, helps in appropriate management of patients thus avoiding unnecessary morbid surgeries.

Introduction:-

According to the Globocon 2018, the incidence of gallbladder cancer cases were found to be 2, 19,420 and mortality rate is 1,65,087.[1] Gallbladder cancer (GBC) is the most common malignancy, representing 80–95% of biliary tract cancers.[2] The overall prognosis has remained dismal with 5-10%, 5-year survival rate.[3,4] Early stage management include the radical resection which has a comparatively good prognosis with long term survival. However, the majority of patients diagnosed in an advanced stage due to vague symptoms of the disease and hence they are inoperable.[5] Although ultrasound, computed tomography (CT), and magnetic resonance imaging (MRI) are being used as an initial preoperative diagnostic modality, but some times they leads to un necessary surgery.[6]USG-FNAC of GB lesion is a safe, quick, and cost-effective preoperative diagnostic tool for accurate diagnosis.[7-12]However, this the procedure is still not used as a first-line diagnostic tool at many health care centers

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due to lack of expertise, facilities, fear of procedure-related complications Hence, the diagnostic utility, standard cytological terminology, and nomenclature systems used for gallbladder lesions on FNAC are lacking.[13] The purpose of this study was to find out the diagnostic utility of USG-FNAC in patients with gallbladder lesions.

Material And Methods:-

In this retrospective study, a search of the database was carried out focusing on patients who underwent USG-FNC of GB lesion between 1st January 2018 to 31st march 2022. Pathology records were retrieved. Data were recorded like age, sex, clinical history, ancillary studies and final diagnosis. Inclusion criteria:Patients of all ages and sex with radiological evidence of gallbladder diseases were included.

At the time of microscopic the smears were categorized into two group with adequate and inadequate or non conclusive. The presence of five or six groups of cells deemed to represent the lesion was considered as adequate for reporting. The microscopic examination was done by two independent pathologists.[14]Cyto-diagnosis was histological correlation was done. A total 105 patients underwent USG FNC of gall bladder lesion. Out of which 21 cases were excluded due to inadequate sample. 11 cases were diagnosed as suspicious of malignancy. 73 cases were analyzed.

Statistics:

The results were presented in numbers and percentages. The sensitivity, specificity and diagnostic accuracy of adequate USG FNACof gall bladder lesion aspiration were calculated.

Results:-

A total of 105 cases underwent USG-FNAC, in GB lesions the male to female ratio was 1:2. The mean age was 56.41years. (Table:1)

Table 1:- Age and sex wise distribution of gallbladder lesions.

Types	Mean ±SD (age)	M: F	Cases
Adenocarcinoma gallbladder	52.47±10.57	1:2	64(87.7%)
Squamous cell carcinoma gallbladder	57.36 ± 13.24	1:0	1 (1.4%)
Mucinous adenocarcinoma gallbladder	55.43±9.39	1:2	3(4.1%)
Poorly differentiated carcinoma	55.36 ± 9.13	2:1	5(6.8%)
Total (%)	56.3±9.54	1:2	73

The majority of cases were found to be adenocarcinoma of the gallbladder. The mean age of malignant cases in male was found to be 56.24 ± 10.05 years, whereas, in females, it was found to be 54.89 ± 7.79 years. The cyto-morphological diagnosis of gallbladder was made by two independent pathologists.

Table 2:- Cytohistodiagnosis correlation of gall bladder lesions.

USG FNAC Diagnosis	NO	Histopathology Correlation	Diagnosis
Adenocarcinoma gallbladder	22	42	Adenocarcinoma (39)[92.8%] Metastasis from liver (3)[7.14%]
Squamous cell carcinoma gallbladder	0	1	Squamous cell carcinoma [100%]
Mucinous adenocarcinoma gallbladder	2	1	Mucinous adenocarcinoma[100%]
Poorly differentiated carcinoma	4	1	Poorly differentiated carcinoma [100%]
	28	45	93.3%

Total (%)			

In cyto-morphology, 73 cases found to be primary gallbladder carcinoma. Out of which 45 cases diagnosis was confirmed based on clinical follow up and available surgical resection histological. (Table: 2)

The sensitivity, specificity, and diagnostic accuracy of USG-FNAC of gallbladder lesions were 97.82, 89.23, and 98.31%, respectively.

Discussion:-

GB carcinoma is commonly seen in developing countries, while its incidence is found to be the high in India. Environmental factors, dietary causes, lifestyle, genetic predisposition, and limited access to health care accounts for geographical variations. [14,15]

GB carcinoma is more common in females as compare to men.[16] In this study, the male to female ratio of GBC was 1:2 whereas in other Indian studies, it was found to be 1:4.2. [7]Main factor contributing factor is estrogen which increases the saturation of cholesterol in bile, thus increasing the risk of gallstone formation in females. Presence of gall stones is believed to be associated as a risk factor for gallbladder cancer.[17]

As compare to developed countries, in India GB carcinoma usually seen in younger patients (fifth and sixth decade). [15] We observed, the mean age of GB carcinoma was 56.4 years, whereas in other studies, the mean age was found to be 45 years.[12]

In this study most common GB carcinoma was found to be adenocarcinoma (87.7%) in cyto smear in contrast to other studies. [7,8,12] On microscopic examination as the smears show mostly cellular smear with cell arranged in acini and sheets with columnar to rounded cells showing nuclei with vesicular chromatin and prominent nucleoli.

As described by Armed Forces Institute of Pathology papillary adenocarcinoma subtype of adenocarcinoma considered to carry good prognosis. [7] Studies done by Yadav **et al**. [12]and Bhartiya **et al**. [7], the incidence of cytological diagnosis of papillary adenocarcinoma cases were found to be 8% and 3.38%, respectively. However, in present study, none of the cases showed, predominantly true papillary fragments neither in cyto-morphology nor inhisto-morphology.

Similarly, mucinous adenocarcinoma comprised of 4.1% in our study, whereas in other studies, it was found to be 3.3–6.1%.[7,8,12,18] It is a rare histological subtype of gallbladder carcinoma which carries poor prognosis as compare to the conventional gallbladder carcinoma.

In this study, we found 1 case (1.4%) of squamous cell carcinoma (SCC) our results were similar to other studies.[7,8,12] SCCs of gallbladder case was diagnosed in cytology as the smear showed polygonal cells with a hyperchromatic-elongated nucleus with dyskeratotic cells in necrotic background.

Kumar **et al**., [10] found 12 (8.28%) cases were of suspicious of malignancy ,similarly we found 13 cases(14.1%) which were suspicious of malignancy.Histo-pathological correlation was available in 7 cases and all cases were turned out to be malignant.

Cyto-histo concordance between malignant cases was found to be 93.33% in the study, whereas in other studies, it was reported to be 94.4%.[8]

We observed the diagnostic accuracy of USG-FNAC is comparable to other studies like Yadav **et al**. [12] and Kumar **et al**.[10]

The USG-guided FNAC of gallbladder lesions was found to be rapid, less invasive quick, cost-effective diagnostic procedure.

Conclusion:-

The USG-guided FNAC of gallbladder lesions techniques ensures satisfactory diagnostic accuracy specially in

malignant conditions of gallbladder lesion. Other advantages are such as minimum invasiveness, rapidity, and cost effectiveness. Hence, helping in appropriate management of patients. Therefore, unnecessary morbid surgeries can be avoided.

Limitation of the study:
Our study was retrospective in nature.

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Conflicts of interest:
There are no conflicts of interest.

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