Journal Homepage: - www.journalijar.com
INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)
Article DOI: 10.21474/IJAR01/2132
DOI URL: http://dx.doi.org/10.21474/IJAR01/2132
ISSN NO. 2320-5407

RESEARCH ARTICLE

TREND OF AVOIDING FNAC'S OF GALLBLADDER EVEN IN CARCINOMA GALLBLADDER ENDEMIC. ZONE.

Neema Tiwari[1], *Parul Gupta[1], Nirupma Lal[1], A.N Srivastava[1] and Osman.Musa[2].

1. Department of Pathology, Era's Lucknow Medical College and Hospital, Lucknow.
2. Department of Surgery, Era's Lucknow Medical College and Hospital, Lucknow.

Manuscript Info

Manuscript History

Received: 25 September 2016
Final Accepted: 27 October 2016
Published: November 2016

Abstract

Introduction:-

Carcinoma gallbladder (Ca GB) is the most common malignancy of the biliary tract and has high incidence in selected populations worldwide. [1] It is eight times more common in North India than in South India. Carcinoma gallbladder is a common occurrence in the Gangetic plains of the Eastern Uttar Pradesh and Western Bihar regions of India. [2, 3] It affects women 2-6 times more commonly than men and its incidence steadily increases with age. [3] It is rarely discovered at a stage where it can be treated by surgery hence its mean 5-year survival is about 1% despite surgical intervention. [4] USG guided FNAC's of the gallbladder are proving to be safe, reliable, cost effective measure of diagnosing carcinoma at it's earliest. However interventional radiologists are reluctant in performing the percutaneous FNAC's of the gall bladder for fear of causing biliary peritonitis, improper availability of services, and lack of awareness and fear of needle tract recurrence. This proves as a big impediment in early diagnosis and treatment of gallbladder carcinomas. This study is an attempt to throw light on the significance of ultrasound guided FNAC as a useful technique for diagnosis of this condition. It is also an attempt to shed light on the reluctance of surgeons to go for an easy, cheap, cost effective method of diagnosis like FNAC and opt for more cumbersome and expensive laparoscopic/open biopsy.

Materials And Methods:-

It was a hospital based retrospective study done in Era's Lucknow Medical College and Hospital. Retrospective data of histopathology and cytopathology for 566 gallbladder lesions in the past two years was taken from the records and morphological diagnosis of these cases confirmed. Two pathologists independently analyzed both the histopathological biopsies and cytopathological smears to rule out inter-observer bias.

Cytopathological criteria's taken into account for diagnosis were cells in clusters, disorganized sheets, small acini, and single pleomorphic cells. Marked nuclear enlargement, nuclear crowding, molding, irregular nuclear membranes, and high nuclear-cytoplasmic (N:C) ratio and prominent nucleoli permit a definitive diagnosis of malignancy when there is adequate well-preserved material [6]

Results:-

Corresponding Author:- Parul Gupta.
Address:- Department of Pathology, Era's Lucknow Medical College and Hospital, Lucknow.

In our study we screened 566 cases of gallbladder lesions in the last two years, out of which 21 were diagnosed as carcinoma gallbladders on histopathology and rest 545 were non neoplastic lesions [Fig.1]. We correlated it with frequency of FNAC based diagnosis carried out in these carcinoma cases, however we found that only 32 of these total cases had undergone FNAC's before diagnosis on histopathology and 20 were diagnosed as carcinomas, 5 were suspicious for malignancy, 5 were inflammatory and 2 were acellular, on cytomorphology.[Fig.2]Hence we found a sensitivity of 80% and specificity of 60%.[Fig.3]

Fig1:-Out of total 322 cases histopathologically confirmed 21 positive cases of GB carcinoma

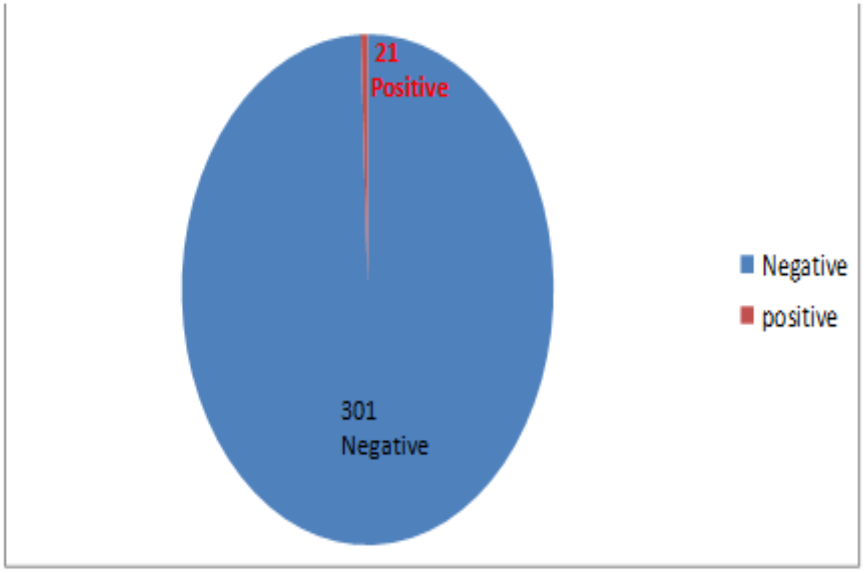

Fig.2:- Distribution of cytological diagnosis in USG guided FNAC in GB lesions-20 (62%) carcinomas,5(15.6%) suspicious,5 (15.6) inflammatory and 2(6.3%) acellular. X axis shows the diagnosis whileY axis shows the number of cases.

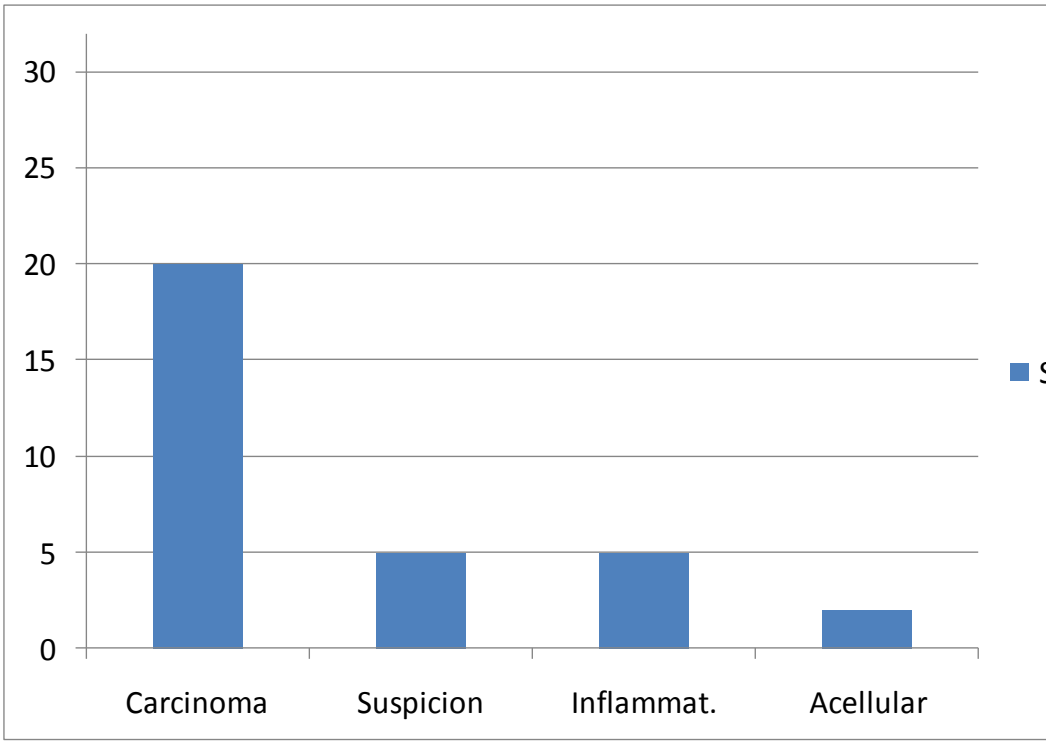

Fig.3:- Sensitivity and specificity in cytologically diagnosed cases of GB Lesions

SMEAR FOR MALIGNANCY[N=32]	DISEASE	NON DISEASE
Positive (Malignant/Neoplastic=25)	A[TP] 20	C[FP] 5
Negative (Non-Neoplastic=7)	B[FN] 5	D[TN] 2

TP-true positive, FP-False positive, FN-False negative, TN-True negative.

- **Sensitivity –[20/25]x100=80%**
- **Specificity-[7/12]x100=60%**

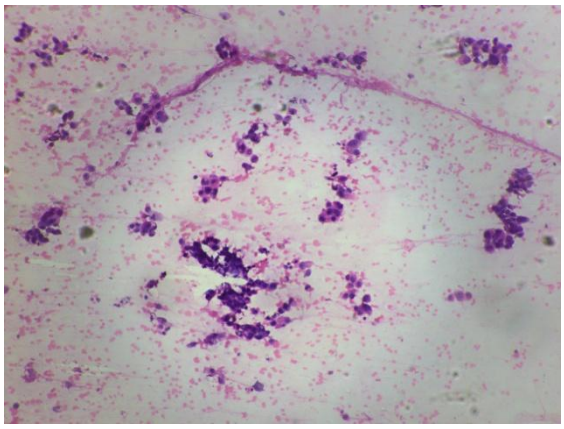

Fig A-Cytology of Adenocarcinoma[10x]

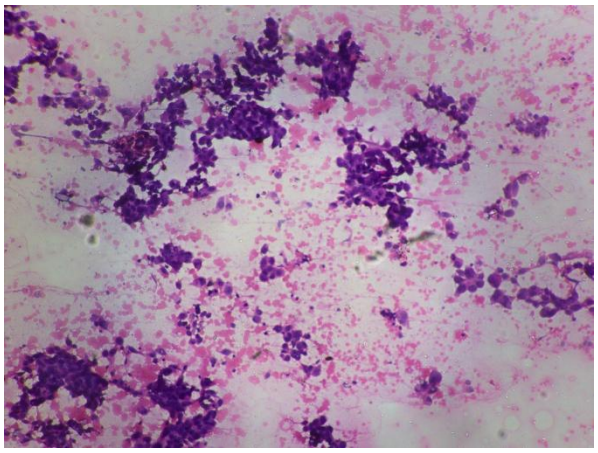

Fig.B-Cytology of adenocarcinoma showing small sheets, papillaroid clusters and few acini.

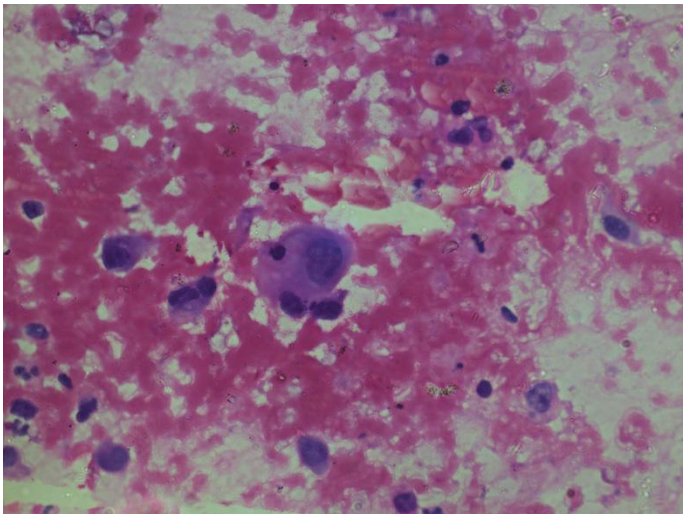

Fig.C- A malignant cell showing neoplastic features in suspected cases of Gall bladder.

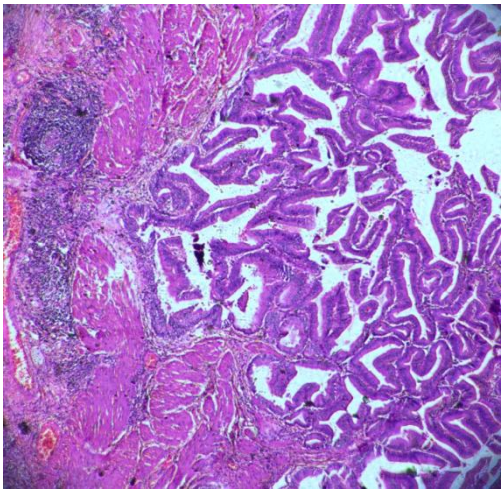

Fig.D- H&E of histopathology of GB hyperplasia at 4X**.**

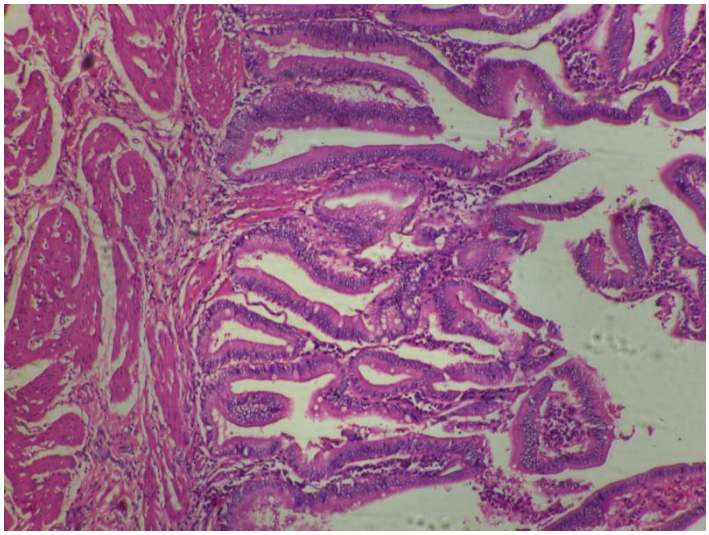

Fig.E- H&E of gall bladder adenoma showing dysplasia at 40X.

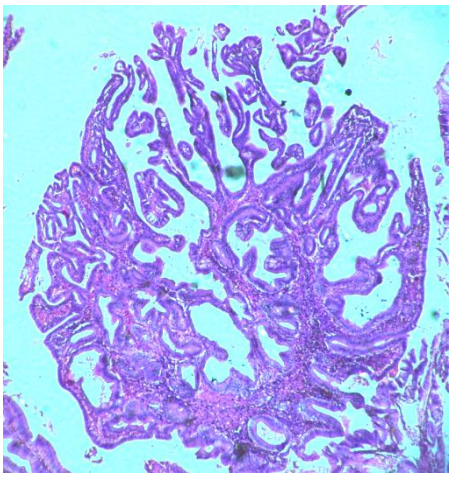

Fig. F-H&E of tubulovillous adenoma Gall Bladder at 4X.

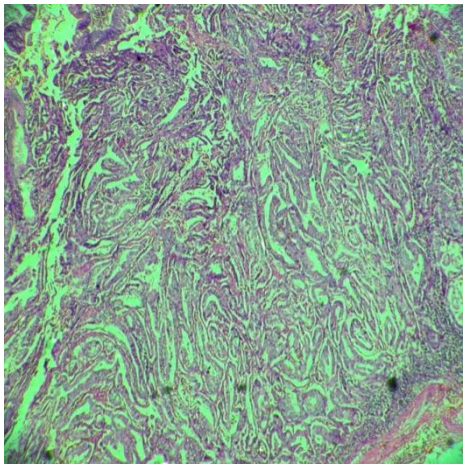

Fig.F- H&E of Adenocarcinoma Gall Bladder at 10X.

Discussion:-

As already seen Carcinoma gallbladder is a common occurrence in the Gangetic plains of the Eastern Uttar Pradesh and Western Bihar regions of India. The disease occurs mostly in females, is difficult to diagnose[2,3] A quick and cost effective fine-needle aspiration cytology (FNAC) procedure of mass lesion of the gallbladder (GB) discovered by imaging techniques speeds up the diagnosis and thus, avoids the unresectable stage of tumor. However FNAC's are still avoided by certain tertiary care centers as first line diagnostic tool due to the reluctance of the operating surgeon as they fear chances of peritonitis or injury to the GB or liver as complications of the procedure. In a study done by Kumar et al in 2015 he saw that 84.3% adequate aspirates including neoplastic (72.5%) and non neoplastic (11.8%) were obtained on performing USG guided FNAC of GB mass.[4,5]. The probability of adequacy of aspirated samples was highly significant (p = 0.0001). The identification of neoplastic etiology was significantly high with p = 0.0001. We in our study correlated the histopathological findings with frequency of FNAC based diagnosis carried out in these carcinoma cases, however we found that only 32 of these cases had undergone FNAC's before diagnosis on histopathology and 20 were diagnosed as carcinomas, 5 were suspicious for malignancy,5 were inflammatory and 2 were acellular, on cytomorphology. The five samples designated suspicious and inflammatory on cytology could have regenerative or degenerative atypia due to associated inflammation with the lesion producing confusion in the diagnosis. Also on comparing the number of positive cases on histopathology[21] and cytology[20] there is a discrepancy of just one case which could be attributed to the surgeons reluctance to go for FNAC despite it having good sensitivity of 80%and specificity of60%.The p-value in our case for diagnostic efficacy of USG-FNAC came out to be <0.01 which was significant.

It was seen in a study that cytology diagnosed 70.5% of the total cases as adenocarcinoma GB when FNAC was used as a first line procedure.[6]. It showed cells in clusters, disorganized sheets, small acini, and single pleomorphic

cells. Marked nuclear enlargement, nuclear crowding, molding, irregular nuclear membranes, and high nuclear-cytoplasmic (N:C) ratio permit a definitive diagnosis of malignancy when there is adequate well-preserved material [6] Adenomatous lesion show a papillary configuration with fibrovascular stalk lined by columnar epithelial cells without any of the abovementioned cytological features of adenocarcinoma. In another correlative study conducted between cytological findings and histopathology Thirty-six cases out of a total of 37 neoplastic cases diagnosed as malignant on cytology had a concordant histopathological diagnosis. The only case, which was reported as suspicious of malignancy, turned out to be xanthogranulomatous cholecystitis on histopathology. The study revealed an overall sensitivity and specificity of 94.7% and 98.6%, respectively, and diagnostic accuracy for adequate aspiration of 95.3%.[7]

FNAC is a breakthrough technique to establish a definitive diagnosis and to guide the surgeon in planning future treatment course. The rapid diagnosis possible with FNAC can shorten or avoid hospital admission and speeds up patient's route to an appropriate specialist. Risks of open/laparoscopic biopsy are greater than FNAC. Ultrasound guided FNAC in gallbladder mass lesion is still in infancy even in carcinoma endemic areas more because of the surgeon's reluctance than cytologists in experience in diagnosing it.

In one study the sensitivity of ultrasound guided FNAC for detection of gallbladder malignancy was 72.91% and specificity 100%.[8] Ultrasound guided FNAC in gallbladder mass lesion is still in infancy even in carcinoma endemic areas more because of the surgeon's reluctance than a cytologists in experience in diagnosing it.

A study showed that the sensitivity of ultrasound guided FNAC for detection of gallbladder malignancy was 72.91% and specificity 100%.[9] In another study a retrospective 7 years study on ultrasound guided FNAC ,it showed overall sensitivity for detecting the carcinoma as high as 90.63% and specificity 94.74%.[10] Ultrasound guided FNAC is an important diagnostic modality for gallbladder mass lesions.

FNAC, being a safe, superior to open biopsy, rapid, cost-effective, and nonsurgical intervention and a daycare investigation procedure, is gaining popularity as a diagnostic modality for GB mass lesions and intra-abdominal lesions. [11] Diffuse mural thickening and single/multiple lesions detected by USG and CT scan are primary indications for FNAC. [12],[13]

Precise radiological localization with novel techniques, multiple passes, and well-defined cytological criteria increases the sensitivity of the test to arrive at a definitive diagnosis. Krishnani *et al*. [14] have reported an adequacy rate of 62.7% from a single puncture. Repeat aspirations performed by experienced hands and better angle on imaging after initial report of inconclusive or inadequate aspiration increases the sensitivity of the test. [12,13] one study the overall adequacy rate of USG guided FNAC was 84.3%. USG/CT-guided percutaneous FNA of mural thickening of the GB is a safe procedure and no major complication was reported in any of the 57 cases, which is comparable with other studies. [13,14]The overall diagnostic accuracy of preoperative USG-guided FNA of the GB lesion has been reported to be up to 97%. [14,15,16] The diagnostic pitfalls of the studies conducted on this topic include necrotic material, hemorrhage, inadequate epithelial cells, and the predominance of mucus flakes. Reactive hepatocytes pose a diagnostic dilemma but repeat aspirate with better precision and angle on imaging confirmed adenocarcinoma on cytology[17,18].

Conclusion:-

In the present study we studied the efficacy of FNAC'S as first line diagnostic modality over histopathological diagnosis and found that FNAC provided 80% sensitivity and 60% specificity. It is important to demonstrate the safety, cost effectiveness and reliability of FNAC's in gallbladder carcinomas, as late diagnosis either due to financial causes or lack of proper diagnostic modalities leads to increased mortality and morbidity due to its poor prognosis. Cytological smears interpreted with clinic-imaging findings and reliable diagnostic criteria with repeated aspirations, whenever indicated, will increase the sensitivity and diagnostic accuracy of the test. Preoperative USG-guided FNAC will offer a speedy diagnosis and urgency of treatment and thus, reduce the incidence of unresectable tumors.

Refrences:-

1. Randi G, Franceschi S, La Vecchia, C. Gallbladder cancer worldwide: Geographical distribution and risk factors. Int J Cancer 2006; 118:1591-602.
2. Dhir V, Mohandas KM. Epidemiology of digestive tract cancers in India IV. Gallbladder and pancreas. Indian J Gastroenterol 1999;18:24-8.
3. Samad A. Gallbladder carcinoma in patients undergoing cholecystectomy for cholelithiasis. J Pak Med Assoc 2005; 55:497-9.
4. Lazcano-Ponce EC, Miquel JF, Muñoz N, Herrero R, Ferrecio C, Wistuba II, et al. Epidemiology and molecular pathology of gallbladder cancer. CA Cancer J Clin 2001;51:349-64.
5. Nikhilesh Kumar[1], Paresh Singhal[2], Ashwini Agarwal[1], Majid Ali Khan.Cytopathological diagnosis of gallbladder mass and mural thickening based on imaging findings: A prospective study of 51 cases. 2015 ; 32 (4) : 234-237.
6. Misra S, Chaturvedi A, Misra NC, Sharma ID. Carcinoma of the gallbladder. Lancet Oncol 2003;4:167-76.
7. Layfield LJ, Wax TD, Lee JG, Cotton PB. Accuracy and morphologic aspects of pancreatic and biliary duct brushings. Acta Cytol 1995;39: 11-8
8. Munazza Iqbal1, Khalid Masud Gondal2, Ahmad Uzair Qureshi2 and Muhammad Tayyab3. Comparative Study of Ultrasound Guided Fine Needle Aspiration Cytology with Open/Laparoscopic Biopsy for Diagnosis ofCarcinoma Gallbladder. Journal of the College of Physicians and Surgeons Pakistan 2009, Vol. 19 (1): 17-20
9. Krishnani N, Shukla S, Jain M, Pandey R, Gupta RK. Fine needle aspiration cytology in xanthogranulomatous cholecystitis. gallbladder adeno-carcinoma and coexistent lesions. Acta Cytol 2000; 44:508-14
10. Lai CH, Lau WY. Gallbladder cancer: a comprehensive. Surgeon 2008; 6:101-10.
11. Kocjan G. Gallbladder and extrahepatic bile ducts. In: Gray W, Kocjan G, editors. Diagnostic Cytopathology. 3 rd ed. UK: Churchill Livingstone Elsevier; 2010. p. 319-31
12. Barbhuiya MA, Singh TD, Poojary SS, Gupta S, Kakkar M, Shrivastav BR, et al. Gallbladder cancer incidence in Gwalior district of India: Five-year trend based on the registry of a regional cancer centre. Indian J Cancer 2012;49:249-57
13. de Boer B. Pancreas, biliary tract and intra-abdominal organs. In: Orell SR, Sterrett GF, editors. Fine Needle Aspiration Cytology. 5 th ed. New Delhi: Churchill Livingstone Elsevier; 2012. p. 297-315.
14. Krishnani N, Dhingra S, Kapoor S, Pandey R. Cytopathologic diagnosis of xanthogranulomatous cholecystitis and coexisting lesions. A prospective study of 31 cases. Acta Cytol 2007;51:37-41
15. Dodd LG, Mooney EE, Layfield LJ, Nelson RC. Fine-needle aspiration of the liver and pancreas: A cytology primer for radiologists. Radiology 1997;203:1-9.
16. Tao LC, Donat EE, Ho CS, McLoughlin MJ. Percutaneous fine-needle aspiration biopsy of the liver. Cytodiagnosis of hepatic cancer. Acta Cytol 1979;23:287-91
17. Ramdas A, Chopra R. Diagnostic accuracy of fine needle aspiration cytology of liver lesions. J Cytol 2003;20:121-3.
18. Barbhuiya M, Bhunia S, Kakkar M, Shrivastava B, Tiwari PK, Gupta S. Fine needle aspiration cytology of lesions of liver and gallbladder: An analysis of 400 consecutive aspirations. J Cytol 2014;31:20-4.