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Spectrum of Diagnosis and Yield of Endoscopic Ultrasound Guided Fine Needle Aspiration Cytology

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ABSTRACT

Endoscopic ultrasound gives high resolution images of the mediastinum and abdominal organ and improves visualization for obtaining tissue sample for cytology. In our study 112 subjects underwent EUS guided FNAC, out of them 51 were diagnosed as carcinoma (45.5%), 15 as tuberculosis (13.39%), reactive adenitis is 13 (11.6%), other benign disease is 27 (24.1%). So overall diagnosis we made in (106/112) (94.6%). 6 (5.3%) were inconclusive. We suggest that EUSFNAC should be the first line investigation for suspected mediastinal and intra-abdominal malignant masses.

KEYWORDS: Endoscopic ultrasound, EUS, FNAC, Intra abdominal mass.

ARTICLE DETAILS

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INTRODUCTION

Fine needle aspiration cytology has established itself as a very useful technique for diagnosis of various benign and malignant lesions[1]. It is done by direct aspiration in case of palpable lumps, under USG or CT guidance in intra abdominal masses and Endoscopic ultrasound guidance in mediastinal as well as intra abdominal and pelvic masses.

Endoscopic ultrasound (EUS) is a high-frequency ultrasound attached to the tip of videoendoscope. The close proximity of the transducer provides high-resolution images of the structures and thus, can detect small lesions that are discriminated with difficulty by computed tomography (CT). It improves visualization of the gastrointestinal wall and abdominal organs[2]. Endoscopic Ultrasound guided Fine Needle Aspiration Cytology (EUSFNA) has established itself as a very useful modality in diagnosis of pancreatic, biliary, retroperitoneal, periportal and mediastinal masses[3,4] The technique has been refined in recent years and now with new Fine needle biopsy (FNB) even tissue can be acquired for histopathology and immunohistochemistry[5]

We have retrospectively analysed our EUSFNA data to assess the diagnostic yield and evaluate its role in various benign and malignant lesions.

MATERIAL & METHODS

This is retrospective analysis of cytology specimens of EUS FNA received from jan 2018 to dec 2019. Total number of cases analysed were 112. Median age of patients was 43 yrs (range 11-85), there were 69 males and 43 females. Thirty five patients had undergone transabdominal FNAC / biopsy earlier but were inconclusive. Patient characteristics are summarized in table 1.

All these cases were extensively worked up before being taken up for EUS FNA and the diagnosis was not clear.

All procedures were performed by Gastroenterologists under conscious sedation or general anaesthesia if required. Patients were called after overnight fasting. Before the procedure patients underwent pre-anaesthetic check-up, complete blood counts and prothrombin time. ECG and X ray Chest was done wherever indicated.

Olympus linear echoendoscope EUME2 was used for all procedures. Average 3 passes were made (range 1-5). Material was spread on slides and air dried smears and fixed slides were prepared.Air dried smears were immediately examined by onsite cytopathologist for adequacy and quality. Based on assessment of cytologist more samples were drawn if required. Isopropyl alcohol was used for fixation. Cell block was made wherever possible. All the samples were

analysed by single pathologist using H & E, Giemsa and papanicolaou stain as shown in Figure 1 to 12

RESULTS

Total 112 Patients 70 males, 42 females underwent EUS FNA. Median age was 43 (range 11-85)

Table 2 and Chart 1 describes the site of FNAC while performing EUS

Table3 and Chart 2 shows out of 112 patients, 51 were diagnosed as carcinoma (45.5%), 15 as tuberculosis (13.39%), reactive adenitis is 13 (11.6%), other benign disease is 27 (24.1%). So overall diagnosis we made in (106/112) (94.6%). 6 (5.3%) were inconclusive.

DISCUSSSION

Cytology is an extremely useful technique for quick diagnosis. It is especially useful for subcutaneous lumps where a direct aspiration is done by pathologist. In case of intrabdominal lumps and mediastinal lumps, people have resorted to USG /CT guided aspirations[6,7]and the results have been impressive. But there are areas in abdomen where transabdominal access is difficult like reteroperitoneum, pancreas etc and also when there are distended bowel loops containing air which hampers clear vision. In such cases EUS FNA has been used with better results. Also the fact that cases of malignant seedling of tract have been reported after USG/CT guided sampling. EUS FNA overcomes this complication as transducer is sitting on lesion in most cases and there is hardly any tract[8]. There are studies of EUS-FNA in pancreatic lesions, mediastinal lesions, gall bladder and reteroperitoneal and peritoneal masses being aspirated by EUS. Present study also defines various lesions where a definitive diagnosis was made by EUS-FNA.

Another advantage of this technique is early results. In our patients, average time of reporting was 4 hrs (range 2 -6 hrs).There is good description of type of Needle, number of passes, value of inhouse pathologist , early results in article by Peter Vilmenn[9]. In this study overall diagnostic accuracy of over 85% with the needle 19G as compared to 94.6% in our study with the needle of 22G.

Before the advent of EUS, mediastinum was a difficult area and people were doing mediastinoscopy to take tissue for diagnosis[10]. For pancreas and other upper abdominal lumps CT/USG guided samples were taken but technically challenging and chances of seedling of tract is there (8). However in a recent study, total complication (needle tract seeding) rate of EUSFNA varies from 0.5% to 3%[11].

We have analysed the spectrum of various diagnosis by EUS FNA at a tertiary care centre in central India

Other studies on diagnosis by EUS have shown a yield of about 78%[12]. Our yield 994.6%) is better probably because of several reasons. Multiple passes, onsite cytopathologist, discarding bloody aspirate, not reusing needle beyond 3 times, staining with all 3 stains- H& E, giemsa and pap stain to name a few. Eversion et al have outlined various ways to increase the yield of EUSFNA[13] and we generally follow similar protocol.

Spectrum of diseases in our study is similar to most published series where malignancy is commonest followed by reactive adenitis and then tuberculosis[14]. Pancreatic FNA were majority malignant (28/36) 77%

Though there are several series of EUSFNA in world literature but our study adds to knowledge that the yield can be very high in dedicated set ups. Pathologist onsite is a great advantage because you can direct endoscopist to take another pass if required and also discard bloody as well as scanty cellular smears moreover classifying and preparing slides both air dried and fixed for requisite staining gives pathologist better material to study and conclude.

CONCLUSION

EUS guided FNA is a useful modality.

Our study reiterates utility of EUSFNA in mediastinal and abdominal masses. We emphasise that EUSFNA should be first line investigation in case of intrabdominal malignant masses as it is safer, less chances of tract seedling and because it is quick and having high yield.

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TABLES:

Table 1: Distribution of Study subjects.

S. No	Characteristics	Observation
1	Age	Range 11-85 Years (median 43 Years)
2	Sex	M=70, F=42
3	PreviousInconclusiveCytology/HPE	35
4	Reporting time	Range 4-6 hours, Average 4 hours
5	Number of Passes	Range 1-5, Average -3

Table 2: Distribution of Subjects according to the site of FNAC.

S. No	Area	Site of FNAC	Number	Total(%)
1	Mediastinal Node	Mediastinal nodes	40	42(37.5)
		Subcarinal	02	
2	Abdominal Organ	Pancreatic mass	32	36(32.1)
		Gall bladder mass	3	
		Peri ampullary mass	1	
3	Luminal Wall	Esophageal wall	6	17(15.2)
		Gastric wall	4	
		Rectal wall	4	
		Bile duct	3	
4	Abdominal Nodes	Periportal node	8	17(15.2)
		Mesentric node	3	
		Peri pancreatic node	3	
		Peri gastric node	2	
		Celiac node	1	
		Total	112	112(100)

Table 3: Diagnosis asper cytology report.

Microscopic diagnosis	Number	Percentage (%)
Carcinoma	51	45.5%
Tuberculosis	15	13.39%
Other benign	27	24.1%
Reactive Adenitis	13	11.6%
Inconclusive	6	5.3%
Total	112	100%

Chart 1: Distribution of subjects as per site of FNAC.

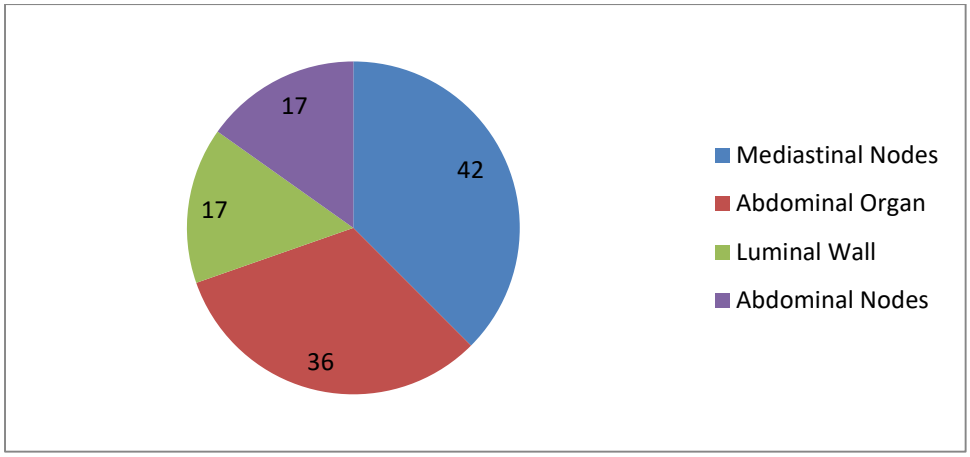
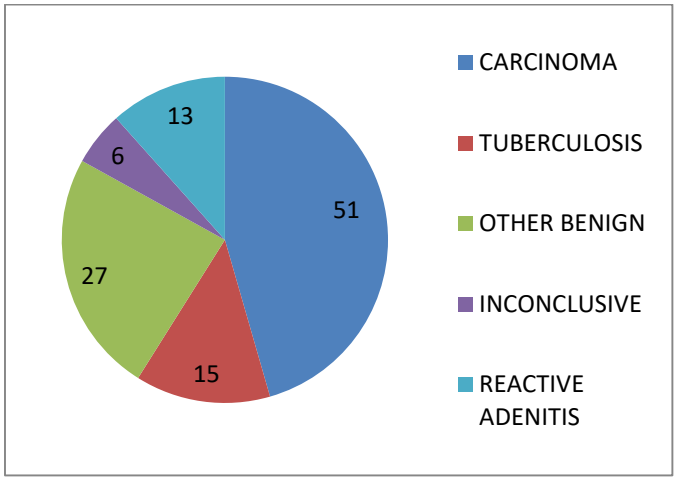
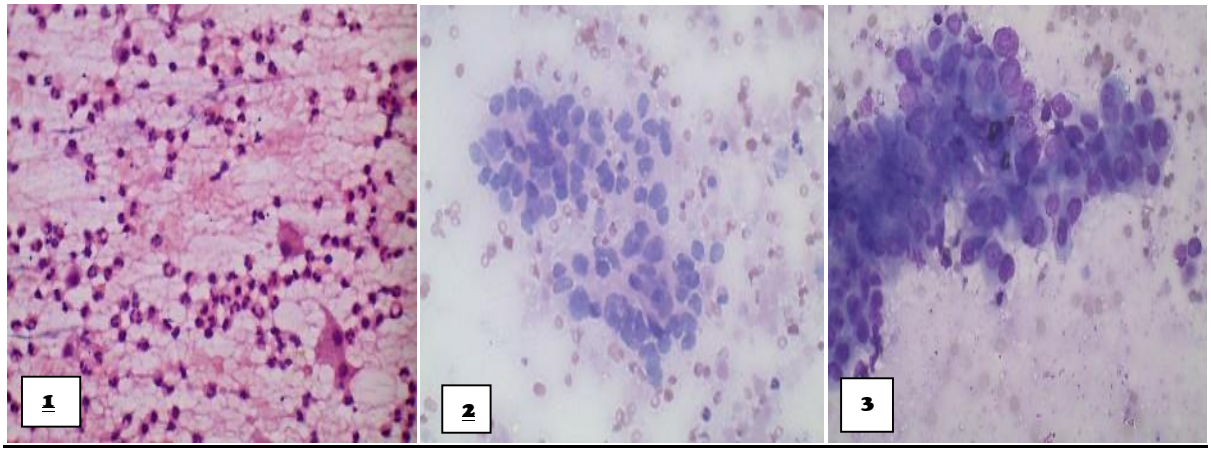
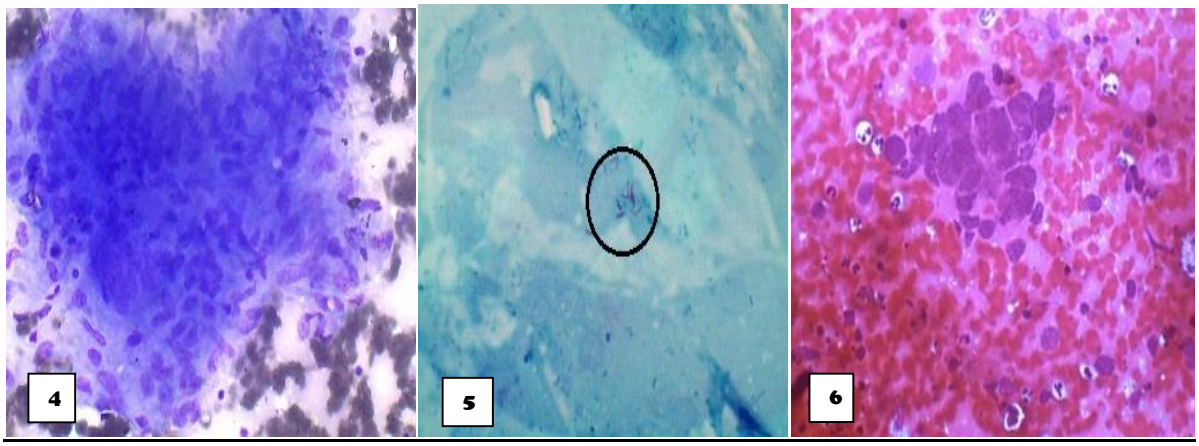


Chart 2: Diagnosis asper cytology report.

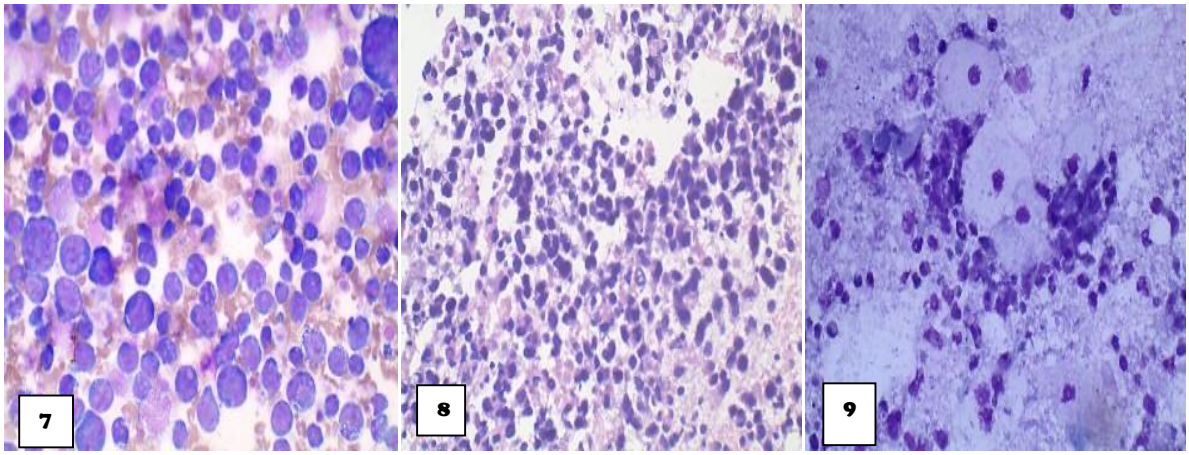




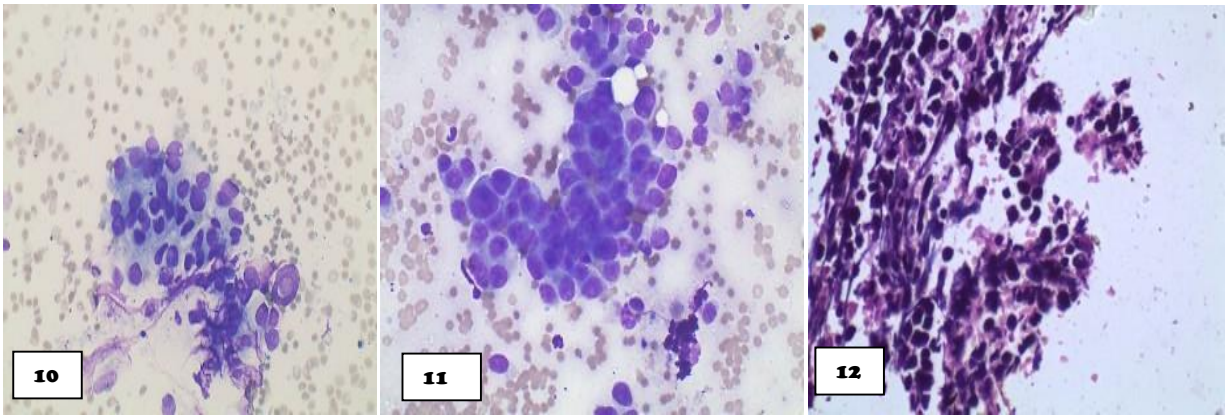
(Fig 1 :pancreatic tail lesion-40 X H & E Stain - Pancreatic abscess, Fig 2: Adenocarcinoma of pancreatic head-40 X Pap stain, Fig 3: Metastatic Adenocarcinoma Peripancreatic lymph node 40 X Giemsa stain)



(Fig 4: Mediastinal Lymph Node-Granulomatous Lymphadenitis 40 X Giemsa stain, Fig 5: Acid Fast Bacilli 100 X Z-N Stain, Fig 6: Mediastinal mass Poorly Differentiated Adenocarcinoma 40 X H & E Stain)



(Fig 7: Lymphoproliferative Disease, Stomach 40 X Giemsa Stain, Fig 8 : Cell Block of FNA from stomach-Lymphoproliferative Disease 40 X H & E section) (Fig 9: Abscess Rectal wall 40 X Giemsa stain)



(Fig 10: Adenocarcinoma Gall Bladder 40 X Giemsa stain) (Fig 11: Metastatic Adenocarcinoma Celiac Lymph node 40 X Giemsa stain) (Fig 12: Small cell carcinoma Mediastinal mass Cell Block 40 X H & E stain 40 X)