

Profile of Endoscopic Ultrasound Guided Fine-Needle Aspiration Cytology (EUS-FNAC) in the Gastrointestinal and Peri-intestinal Lesions

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ABSTRACT

Introduction: Endoscopic ultrasound (EUS) is a sensitive technique for preoperative staging of gastrointestinal tumors. In view of this, the present study was commenced with objective of to study the spectrum of diagnosis made after EUS-FNAC, diagnostic utility and to assess the impact of diagnoses on patient management.

Material and Methods: The present cross sectional descriptive study conducted over 44 patients who underwent EUS guided FNAC of gastrointestinal and peri-intestinal lesions, by using 25 gauge needle detected on CT or USG. Obtained data was arranged according to microscopic diagnosis and was expressed as a percentage of respondents according to demographic details and were analyzed using the SPSS Version 17 software.

Results: Total of 44 patients, underwent EUS guided FNAC of gastrointestinal and peri-intestinal lesions, detected on CT or USG, out of which 36 cases were diagnosed and 8 cases remained undiagnosed on EUS guided FNAC 37 % cases reported neoplastic behaviour.

Conclusion: EUS-guided needle biopsy is a safe and efficient method, provides better visualization of small lesion that may be missed by CT or Trans abdominal USG and permits early diagnosis, detects unresectable disease, prevents unnecessary surgical exploration and reduces cost of care significantly.

Keywords: Endoscopic Ultrasound, Fine-Needle Aspiration Cytology, Gastrointestinal, Peri-intestinal

MATERIAL AND METHODS

The present cross sectional descriptive study was carried out in the department of pathology, Jagjivan Ram Hospital (Western Railway), Mumbai from July 2011 to December 2015. Total of 44 patients of either gender underwent EUS guided FNAC of gastrointestinal and peri-intestinal lesions, by using 25 gauge needle detected on CT or USG. Informed consent was taken from the enrolled patients and ethical clearance was obtained. Sample adequacy on-site was assessed by Romanowsky stains. Fixation and staining of the smears for diagnostic purposes was carried by PAP and May-Grunwald-Giemsa (MGG) stain. Obtained data was arranged according to microscopic diagnosis and was expressed as a percentage of respondents according to demographic details and were analyzed using the SPSS Version 17 software.

RESULTS

Total of 44 patients, 24 (54.54%) male and 20 (45.45%) female, mean age of 44 years (10 to 78 years), underwent EUS guided FNAC of gastrointestinal and peri-intestinal lesions, detected on CT or USG, out of which 36 cases were diagnosed and 8 cases remained undiagnosed on EUS guided FNAC 37 % cases reported neoplastic behaviour. Table-1 show microscopic diagnosis of EUS guided FNAC of gastrointestinal and peri-intestinal lesions (Figure 1 to 12).

DISCUSSION

Endoscopic ultrasound-guided fine needle aspiration (EUS-FNA) has now been incorporated into the diagnostic and staging algorithm for the evaluation of benign and malignant diseases of the gastrointestinal (GI) tract and of adjacent organs. Introduced in the early 1980s from a pure imaging modality into a more interventional and lately therapeutic procedure.⁵ Vilmann P et al⁶ revealed that endoscopic ultrasound examination of the upper gastrointestinal tract using a curved-array transducer will provide more significant diagnostic information of clinical

INTRODUCTION

Endoscopic ultrasound (EUS) is a sensitive technique for preoperative staging of gastrointestinal tumors.¹ High-frequency ultrasound and 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). Thus, it is pure imaging modality with attachment of ultrasound probes to endoscopes due to which it improves visualization of the gastrointestinal wall and abdominal organs.²

The first EUS-FNA for cytologic diagnosis of a pancreatic lesion was performed by Peter Vilmann in 1991 and published in 1992. His thesis which is considered a landmark study was published as a book on EUS using curved linear array transducer with description and development of the biopsy needle and the EUS-FNA procedure.³ EUS-FNA is commonly used to sample peri-intestinal structures (lymph nodes and masses in the pancreas, liver, adrenal gland, bile duct, kidney, lung, etc).⁴ In view of this, the present study was commenced with objective of to study the spectrum of diagnosis made after EUS-FNAC, diagnostic utility and to assess the impact of diagnoses on patient management.

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How to cite this article: Yoganand V. Patil, Lalita Y. Patil, Indranil Bhattacharya, Anjali Amrapurkar. Profile of endoscopic ultrasound guided fine-needle aspiration cytology (EUS-FNAC) in the gastrointestinal and peri-intestinal lesions. International Journal of Contemporary Medical Research 2016;3(6):1747-1749.

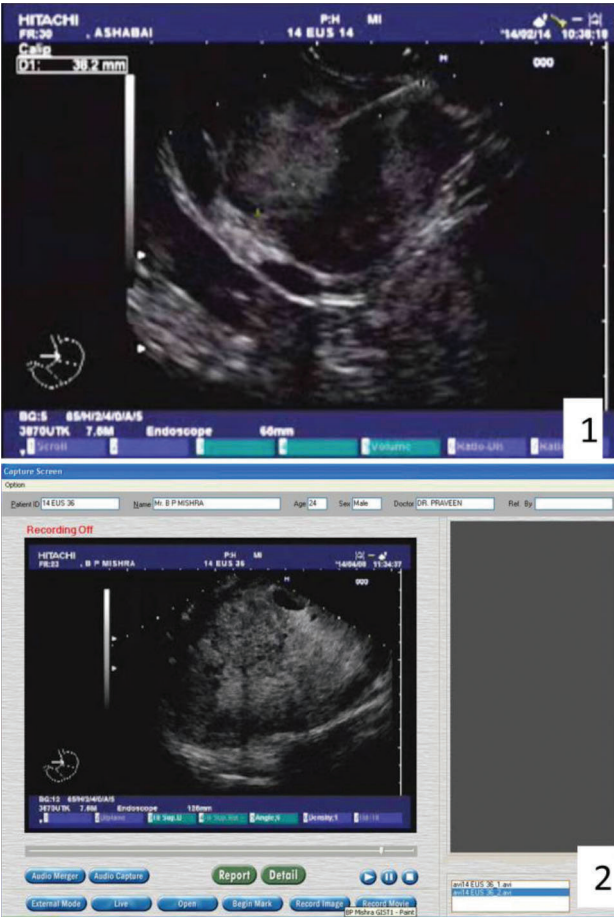


Figure 1 and 2: Endoscopic ultrasound findings

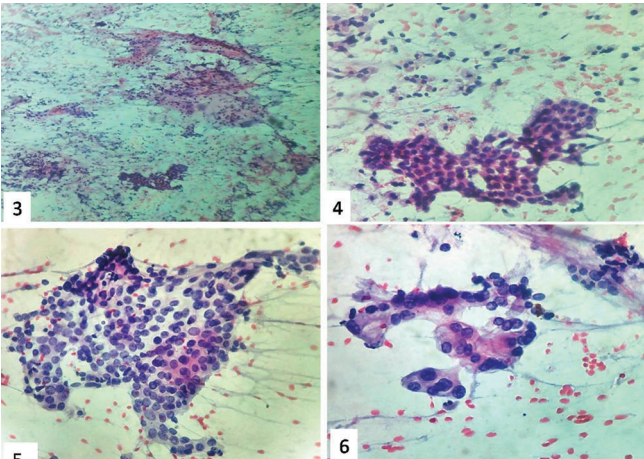


Figure-3: Chronic Pancreatitis 10X (PAP stain); Figure-4: Chronic Pancreatitis 40X (PAP Stain), Figure-5: Adeno carcinoma of Pancreas 40X PAP, Figure-6: Adeno carcinoma of Pancreas 40X PAP

relevance to gastroenterology. Endoscopic ultrasound-guided fine-needle aspiration (EUS-FNA), has been spread as a good diagnostic tool for gastrointestinal and perigastrointestinal lesions,⁷ as it offers the possibility of collecting samples, providing a definitive cytological and/or histological evidence of the presence of malignancy, has strongly contributed to changing EUS from a subjective, highly operator dependant procedure into a more objective one.⁵ The present study reported that, 36 cases were diagnosed and 8 cases remained undiagnosed on EUS guided FNAC with

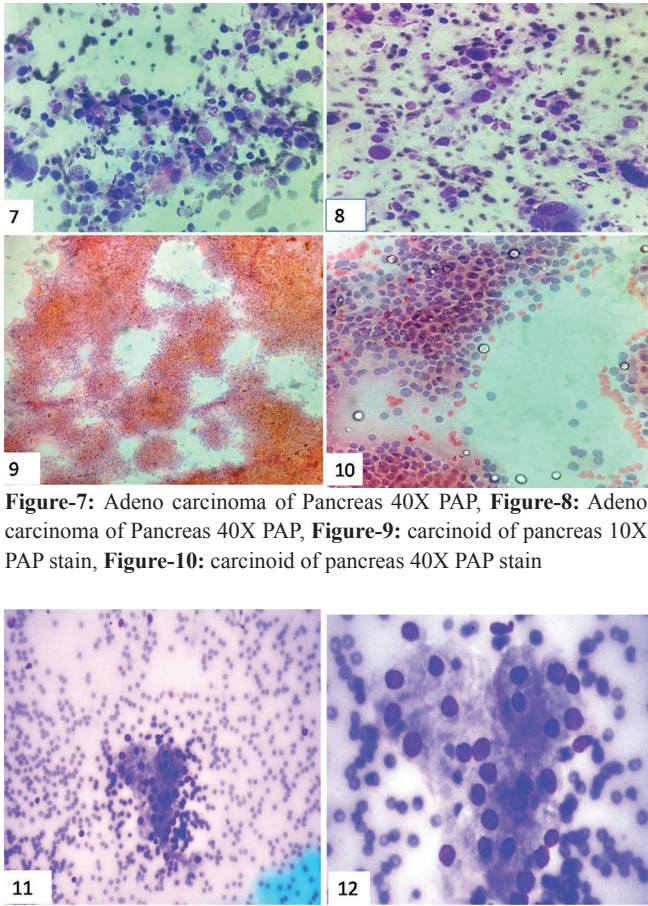


Figure-7: Adeno carcinoma of Pancreas 40X PAP, Figure-8: Adeno carcinoma of Pancreas 40X PAP, Figure-9: carcinoid of pancreas 10X PAP stain, Figure-10: carcinoid of pancreas 40X PAP stain

Figure-11: Pseudopapillary tumour of pancreas 10X PAP, Figure-12: Pseudopapillary tumour of pancreas 40X PAP.jpg

Microscopic Diagnosis	% EUS cases
Negative for malignancy	18%
Non Diagnostic	18%
Reactive Lymphadenitis	11%
Benign Inflammatory Lesion	5%
Carcinoid	5%
Chronic Necrotising Granulomatous Lymphadenitis	5%
Chronic Pancreatitis	5%
Cystic Neoplasm of Pancreas	5%
Malignant Epithelial Tumour of Pancreas	28%

Table-1: Distribution of microscopic diagnosis of EUS guided FNAC of gastrointestinal and peri-intestinal lesions

37 % cases reported neoplastic behaviour. Hunerbein M et al¹ investigated the role of EUS-guided biopsy in the evaluation of peri-intestinal tumors and reported that ultrasonography guidance of the biopsy needle enabled precise tissue sampling even of small lesions with a diameter of 1 cm. Raddaoui E et al⁸ determined the utility of EUS-guided FNA cytology in the diagnosis of deeply seated gastric mass lesions and reported that EUS-FNA cytology, when combined with a histologic assessment of cell blocks provides accurate and efficient tissue diagnosis of a wide variety of deeply seated gastric mass lesions. Iglesias-García J et al⁹ evaluated the feasibility; safety and diagnostic yield of this newly developed slim echoendoscope for performing EUS-guided FNA/FNB and reported that EUS-FNB was feasible in 85 cases (97.7%), diagnostic yield was

86.21% (95%CI 77.4-91.9) in the intention-to-treat analysis and 88.24% (95%CI 79.7- 93.5) in per-protocol analysis and reported no complications related to the technique.

Endoscopic ultrasound-guided fine needle aspiration (EUS-FNA) also lowers the risk of peritoneal seeding from pancreatic cancer as compared with percutaneous FNA.¹⁰ The application of CT-guided percutaneous FNA in GI tract lesions, in general, has been limited in spite of the use of this technique in other organs such as the pancreas, liver, kidney, and other organs. Recently, EUS-guided FNA has been proved to be an efficient tool in the evaluation of deeply seated, unreachable GI lesions. EUS-FNA is cost-effective, less invasive, and highly sensitive and specific. It can be used both for diagnosis and staging purposes of various upper GI diseases.⁸

The early and accurate diagnosis of these rare lesions affects the patient management and facilitates the possibility of optimal surgical resection, which may reduce the number of nonresectable or metastatic cases.⁸ The factors that should be taken into consideration to achieve good specimens includes selection of needle size, necessity of stylet and suction, number of strokes and passes as well as presence of the on-site cytopathologist.¹¹

CONCLUSION

EUS-guided needle biopsy is a safe and efficient method for tissue sampling of peri-intestinal lesions. This minimally invasive technique provides adequate biopsies and thus, improves the diagnostic value of endoscopic ultrasonography. It provides better visualization of small lesion that may be missed by CT or Trans abdominal USG and permits early diagnosis and plays role as neoadjuvant chemotherapy. It is a safe procedure, that detects unresectable disease, prevents unnecessary surgical exploration and reduces cost of care significantly.

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Source of Support: Nil; **Conflict of Interest:** None

Submitted: 29-04-2016; **Published online:** 30-05-2016