Endoscopic Ultrasound-Guided Fine Needle Aspiration Diagnosis of Pancreatic Endocrine Neoplasms: An Institution’s Experience

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ABSTRACT

Introduction. Pancreatic endocrine neoplasms (PENs) are rare tumors of the pancreas, which are increasingly diagnosed by endoscopic ultrasound-guided fine needle aspiration (EUS-FNA). In this study, we reviewed our experience in diagnosing PENs via EUS-FNA in 59 patients. Methods. A search of the pathology database at Yale-New Haven Hospital revealed ninety-five patients diagnosed with PENs via EUS-FNA between January 2005 and January 2012. The diagnosis was based on cytomorphologic features and immunophenotypic findings if available. In this retrospective study, cytoarchitecture and immunocytochemistry results as well as clinical data, ultrasound findings, and surgical pathology follow-up from these patients were evaluated. Results. Twenty-five of the patients were male and thirty-four were female with ages ranging from 26 to 85 years (median 58 years). The tumors were solid and cystic in 46 and 13 cases, respectively, with sizes ranging from 0.4 to 11 cm (mean 2.6 cm). Rapid on-site evaluation was performed for all cases. Based on cytomorphologic features and adjunct immunocytochemistry, when performed, 53 patients were diagnosed with PEN, while a diagnosis of “suspicous for PEN” was rendered in the remaining 6 patients. Thirty-three patients (56%) had surgical follow-up, which confirmed all cytopathologic diagnoses of PENs. Conclusions. The cytological findings in our series are similar to those previously described. When present in abundance, these features are characteristic of PENs. However, immunocytochemical studies are often necessary to substantiate a definitive diagnosis. One neuroendocrine marker (chromogranin, synaptophysin or CD56) is sufficient to elucidate neuroendocrine differentiation in PENs, at least in well differentiated tumors. Our data demonstrate that EUS-FNA can reliably diagnose PENs. On-site evaluation is crucial to ensure adequate material for ancillary studies.

INTRODUCTION

Pancreatic endocrine neoplasms (PENs) are rare tumors of the pancreas which account for about 4% of all pancreatic tumors. These tumors are increasingly detected due to increased availability and improved sensitivity of imaging modalities. Endoscopic ultrasound (EUS) has become accepted as an accurate and cost-effective method for diagnosing pancreatic endocrine neoplasms. The sensitivity and specificity of endoscopic ultrasound-guided needle aspiration (EUS-FNA) for PEN diagnosis approach 98% and 100%, respectively. On-site evaluation by a cytopathologist further enhances the diagnostic accuracy of this procedure and allows for the appropriate allocation of specimen material for ancillary testing. Assessment of cytopathology in conjunction with immunocytochemistry helps to narrow the differential diagnosis raised in this scenario and can confirm the diagnosis. Accurate preoperative diagnostic workup of PENs allows for appropriate management of these lesions. Given the rarity of this entity, it is difficult to compare the results of experience with PENs at a single institution. The aim of this study was to document a large series of PENs diagnosed by EUS-FNA with histologic follow-up.

METHODS

A search of the pathology database at Yale-New Haven Hospital revealed ninety-five patients diagnosed with PEN via EUS-FNA between January 2005 and January 2012. The diagnosis was based on cytomorphologic features and immunophenotypic findings if available. In this retrospective study, cytoarchitecture and immunocytochemistry results as well as clinical data, ultrasound findings, and surgical pathology follow-up from these patients were evaluated. Results. Twenty-five of the patients were male and thirty-four were female with ages ranging from 26 to 85 years (median 58 years). The tumors were solid and cystic in 46 and 13 cases, respectively, with sizes ranging from 0.4 to 11 cm (mean 2.6 cm). Rapid on-site evaluation was performed for all cases. Based on cytomorphologic features and adjunct immunocytochemistry, when performed, 53 patients were diagnosed with PEN, while a diagnosis of “suspicous for PEN” was rendered in the remaining 6 patients. Thirty-three patients (56%) had surgical follow-up, which confirmed all cytopathologic diagnoses of PENs. Conclusions. The cytological findings in our series are similar to those previously described. When present in abundance, these features are characteristic of PENs. However, immunocytochemical studies are often necessary to substantiate a definitive diagnosis. Our data demonstrate that EUS-FNA can reliably diagnose PENs. On-site evaluation is crucial to ensure adequate material for ancillary studies.