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ORIGINAL ARTICLE

Correlation of liver and pancreas endoscopic ultrasonography-guided fine-needle aspiration biopsy in patients with a primary pancreatic lesion

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KEYWORDS
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Background Endoscopic ultrasonography (EUS) is commonly used in the evaluation of pancreas masses, and when a liver lesion is visualized, it can undergo a fine-needle aspiration (FNA). This can provide diagnostic and staging information. The purpose of the study was to correlate the findings of patients who underwent EUS FNA biopsy of a pancreas lesion and a liver lesion during the same procedure.

Materials and methods The pathology database at Washington University Medical Center was searched for EUS FNA biopsy cases where biopsy of both the pancreas and liver were performed over a consecutive 10-year period (2003-2013). All pathology reports were reviewed, and clinical information and diagnostic results were recorded.

Results A total of 102 cases were identified. For pancreas cases, 79.4% were malignant and for liver cases, 58.8% were malignant. In pancreas lesions categorized as suspicious for malignancy (9%), the liver biopsy provided a diagnosis of malignancy in 67% of cases. A malignant pancreatic cohort demonstrated a 62.9% liver malignancy. A malignant liver cohort corresponded to a malignant pancreas diagnosis in 86.6% of cases and a suspicious-malignant group of 98.3%.

Conclusions The 102 cases with concomitant EUS FNA biopsy of the pancreas and liver demonstrated the ability to provide a diagnosis of pancreas malignancy and correlate regional metastatic malignancy in the liver. In patients with a pancreas mass and in the appropriate clinical setting, a liver EUS FNA biopsy has the ability to provide a diagnosis of malignancy and demonstrate a high positive predictive value of malignancy in the pancreas (98.3%).

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Introduction

Patients presenting with a pancreas mass or abnormality are commonly evaluated by endoscopic ultrasonography (EUS). During the ultrasonographic evaluation of the region, portions of the liver can be examined in addition to the pancreas. The imaging features of the pancreas and liver can guide the endoscopist in determining whether there is a need for fine-needle aspiration (FNA) biopsy. The clinical and imaging characteristics of a pancreas mass can raise the possibility of neoplasia, which is commonly adenocarcinoma. These imaging characteristics include enlarged regional lymph nodes, neoplastic infiltration of the mesenteric vascular supply and/or surrounding soft tissue, and potential regional metastatic lesions, such as those that could be present in the liver. Lesions in the liver can vary by appearance and size, and a variety of imaging characteristics can suggest a benign or malignant process. The endoscopist has the ability to visualize and biopsy liver nodules in the left lobe of the liver by EUS. In the clinical circumstance of a proven or suspected pancreatic neoplasm, the image characteristics and FNA biopsy results can contribute to the diagnosis and staging of pancreatic neoplasia. To our knowledge, a study of combined liver and pancreas EUS FNA biopsy correlation has not been reported. This study examined cases where patients underwent EUS FNA biopsy of a pancreas lesion and liver lesion during the same procedure in order to examine and correlate the results.

Materials and methods

The pathology database at Washington University Medical Center/Barnes-Jewish Hospital was retrospectively searched for EUS FNA biopsy cases where biopsy of both the pancreas and liver were performed. This occurred over a consecutive 10-year period from January 1, 2003 to December 31, 2013. These were limited to single procedures where both the pancreas and liver were sampled concomitantly. They did not include separate procedures where other sites or 1 site alone was biopsied. The cytopathology reports were collected, and diagnostic terminology provided on the reports was reviewed and categorized. When present, corresponding or subsequent pertinent surgical pathology reports were collected. All pathology reports were reviewed, and clinical information and diagnostic results were recorded. Where appropriate, the subsequent clinical course and follow-up was ascertained and the clinical demographics of the patients were reviewed. For purposes of categorization, the final results were placed in general categories, which included malignancy, suspicious for malignancy, atypical, and negative/benign. Standard cytopathology diagnostic criteria for pancreatic and hepatic FNA biopsy were used during routine clinical practice.

EUS FNA biopsy performance included direct aspirate smears that were both air dried and alcohol fixed. Alcohol-fixed smears were stained by a Papanicolaou method and air-dried smears were stained by a modified Wright-Giemsa method. Needle rinse material was used for either cytospin slides or standard cell block method. The study was approved by the institutional review board.

Results

A total of 102 cases were identified. The clinical analysis noted a mean age of 64 years (range 23-91 years) with relatively even male-female ratio 1:1.25. The majority of the pancreas lesions were solid (94.2%) with fewer designated clinically as cystic (5.8%). One-half were located in the head of pancreas (51%) with the next most common anatomic location being in the body/tail (29%) (Table 1).

The pancreas EUS FNA diagnostic categories were primarily malignant (79.4%) followed by atypical-suspicious (11.7%) and benign cases (4.9%) (Table 2). The liver EUS FNA diagnostic categories were primarily malignant (58.8%) followed by atypical-suspicious category of (9.7%) and about one-quarter of cases categorized as benign (27.4%) (Table 3).

In the cohort of cases with a malignant pancreatic EUS FNA, the corresponding biopsied liver lesion demonstrated a definitive malignant category in 62.9% of cases and a combination of atypical-suspicious with malignant category increased that to 71.6%. The benign liver category accounted for about one-quarter of cases within the malignant pancreatic cohort (25.9%) (Table 4).

In cases with a suspicious for malignancy categorization by pancreas EUS FNA (8.8% of total), the corresponding liver lesion demonstrated a definitive malignant category in 67% of cases and an atypical and malignant grouping increased it to 78%. A benign liver category accounted for 22% for this pancreatic cohort (Table 5). When combing the

Table 1 Pancreas lesion clinical characteristics: 102 cases.

Characteristics	Total	Percentage
Age, y, mean (range)	64 (23-91)	
Sex		
Male	48	47
Female	54	53
EUS appearance		
Solid	96	94.2
Cyst	6	5.8
Location		
Head	52	
Neck	8	
Uncinate	3	
Body	19	
Tail	11	
Not specified	9	
Total	102	

Abbreviation: EUS, endoscopic ultrasonography.