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ORIGINAL ARTICLE

Predictive value of intra-abdominal lymph nodes in pancreatic endoscopic ultrasonography–guided fine-needle aspiration biopsy

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Introduction Endoscopic ultrasonography (EUS)-guided fine-needle aspiration (FNA) biopsy is a commonly used method for the evaluation of pancreatic lesions. EUS-guided FNA of the intra-abdominal lymph nodes (LNs) can provide critical diagnostic information that is important for clinical management and tumor staging. This study examines the predictive value of intra-abdominal LN EUS-guided FNA biopsy associated with pancreatic lesions.

Materials and methods Over a 10-year period, the pathology database was searched for patients with concurrent pancreas and intra-abdominal LN EUS-guided FNA biopsy. The corresponding reports were reviewed, and clinical information and diagnostic results were recorded.

Results There were 252 cases where both a pancreas lesion and intra-abdominal LN were biopsied. Of this group, 182 LNs were classified as negative (72%), 47 as positive (19%), and 23 as atypical (9%). Within the negative LN cohort, the pancreas FNAs fell into the following diagnostic categories: benign (47%), malignant (30%), and atypical/suspicious (23%). Within the positive LN cohort, the pancreas lesion correlated with the following diagnostic categories: malignant (89%), atypical (4%), and suspicious (6%). A positive LN EUS-guided FNA biopsy had a 98% positive predictive value for malignancy. Within the atypical LN cohort, the pancreas correlated with the following diagnostic categories: malignant (57%), atypical/suspicious (26%), and benign (17%).

Conclusions An atypical LN diagnostic category is strongly associated with a malignant pancreas lesion. A positive LN EUS-guided FNA biopsy has a 98% positive predictive value for pancreatic malignancy.

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A positive diagnostic category for an intra-abdominal LN can provide strong predictive evidence of a corresponding malignancy of the pancreas.

Introduction

Endoscopic ultrasonography (EUS)-guided fine-needle aspiration (FNA) is the standard method for evaluation of masses of the pancreas. Most of these patients present with painless jaundice or weight loss and have a high clinical suspicion for malignancy, primarily adenocarcinoma. The efficacy and effectiveness of the procedure for the diagnosis of malignancy has been well established.[1] Due to the nature of the disease process, many patients who initially present will not be resectable due to a variety of factors, including imaging findings of local tumor invasion and presumed regional lymph node (LN) and liver metastases. Therefore, the primary diagnosis is often established by EUS-guided FNA biopsy. In some instances, the regional LN can be abnormal or enlarged. A variety of ultrasonography imaging characteristics can raise the possibility of a pathologic process in the LN, and these include such features as increased size and abnormal shape of the LN with loss of normal architectural configuration.[2] Patients with a pancreatic abnormality and abnormal intra-abdominal LNs can have them concurrently evaluated during the EUS-guided FNA biopsy procedure. There are select clinical scenarios where the pancreas lesion will not yield diagnostic material (as judged by a rapid on-site evaluation [ROSE] or on the final interpretation); and the abnormal intra-abdominal LNs will be evaluated along with the pancreas during a single interventional procedure to assist in providing a diagnosis. Some primary pancreatic adenocarcinomas are nondiagnostic or below the threshold of definitive diagnosis (atypical to suspicious); this can be for a variety of reasons including among other contributing factors: extensive tumor desmoplasia, which makes obtaining a sufficient sample difficult; anatomic location, which can be more technically difficult to biopsy; lesional hemorrhage with hemodilution of the FNA biopsy; and processing or fixation problems. In these circumstances, the EUS-guided FNA biopsy of abnormal intra-abdominal LNs has the potential to provide a definitive diagnosis and therefore prevent the patient from having a delay in diagnosis, repeat interventional EUS-guided FNA biopsy procedure at a later date, or other invasive procedure (such as surgery or laparoscopy) to establish the diagnosis. The purpose of the study was to determine the predictive value of intra-abdominal LN EUS-guided FNA biopsy and pancreatic EUS-guided FNA biopsy in patients with pancreatic lesions.

Materials and methods

The pathology database at Barnes-Jewish Hospital was retrospectively searched for EUS-guided FNA biopsy cases where biopsy of both the pancreas and intra-abdominal LNs were performed. This occurred over a consecutive 10-year period from 2001 to 2011. These were limited to single procedures where both the pancreas and intra-abdominal LNs were sampled concomitantly. They did not include separate procedures where other sites or 1 site alone was biopsied. LN sites were limited to regional and intra-abdominal locations. 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. From a results standpoint, this patient cohort is primarily examined through a filter of the EUS-guided FNA biopsy category for the intra-abdominal LN results and not primarily the pancreas.

EUS-guided 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

There were 252 cases where a pancreas lesion and intra-abdominal LN were sampled together over the 10-year consecutive search. The majority of patients were male (62%), with media age of 60.5 years and an age range of 22 to 88 years. The majority of pancreas lesions were located in the head (57.5%) and the majority were solid (90.5%). The patient demographics are presented in Table 1. All the EUS-guided FNA biopsies were performed without ROSE. This was performed in a large academic tertiary referral-based health care environment with an experienced group of active endoscopists and numerous individual pathologists with varying degrees of experience.

Of the total 252-case cohort group, 182 LNs were classified as negative (72%), 47 as positive (19%), and 23 as atypical (9%) (Table 2). Within the negative LN cohort (182 cases), the pancreas lesion FNA correlated with the following diagnostic categories: 84 cases were benign (47%); 55 cases were malignant (30%); and 43 cases were atypical/suspicious (23%) (Table 3).