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【 EDITORIAL 】

The Need for Histological Preparation of Endoscopic Ultrasound-guided Fine-needle Aspiration Specimens to Diagnose Rare Pancreatic Etiologies

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Since tissue sampling of a pancreatic mass is usually challenging, it has been difficult to diagnose a wide variety of pancreatic lesions. The diagnostic paradigm has been changing with the development of tissue sampling techniques and imaging examinations. These two approach prongs have been complementarily developed over several decades. Endoscopic ultrasound-guided fine-needle aspiration (EUS-FNA), which has emerged as an innovative sampling technique for pancreatic lesions, has drastically improved the tissue acquisition, with accuracy rates for pancreatic cancer exceeding 95% (1). The accuracy has increased with several technical improvements and become applicable to minor etiologies other than pancreatic cancer with tissue preparation techniques (2-5), such as the manual isolation of desirable sections (6, 7) and the cell block method (8, 9). These techniques enable histological preparation, which allows for additional staining, resulting in thorough immunohistochemical evaluations.

Clinicians often encounter pancreatic lesions other than typical ductal carcinoma, such as neuroendocrine neoplasms, malignant lymphoma, metastatic lesions, inflammatory masses, an ectopic spleen, etc. Although these relatively common diseases can be diagnosed using imaging modalities, it seems nearly impossible to diagnose other extremely rare, miscellaneous etiologies without a pathological evaluation.

Pancreatic schwannoma is one such uncommon etiology. Hanaoka et al. reported the first case of pancreatic schwannoma diagnosed using EUS-FNA without surgical resection or an autopsy (10). The most important factor influencing their successful diagnosis was the technique used to prepare histological specimens, which involved isolating preferable sections using stereomicroscopy. Histological preparation, rather than cytological preparation, enables the preparation of additional slices for immunohistochemical and genetic evaluations. Without immunohistochemistry, schwannoma cannot be differentiated from other spindle cell tumors, including gastrointestinal stromal tumors (GISTs), solitary fibrous tumors, and myogenetic stromal tumors, for which clinical strategies substantially differ. Likewise, immunohistochemistry provides useful clues for defining inflammatory masses, including autoimmune pancreatitis. An evaluation to determine the subtype of an intraductal papillary mucinous neoplasm (IPMN) of the pancreas helps predict the malignant potential and prognosis. A genetic search using EUS-FNA samples may become standard for determining the optimum clinical practices in the near future. The histological preparation of EUS-FNA samples appears necessary for pancreatic masses, except in cases that require only the simple confirmation of a typical cancer.

Macroscopic sectioning has been reported to be effective even without a stereoscope (6). In their report, a sample that had been expelled from a 19-gauge needle and carefully examined on a glass slide was divided into a macroscopic visible core (MVC; whitish or yellowish pieces of tissue with an apparent bulk, not including paste-like or liquid-like specimens) and other tissue. They reported that adequate tissues were frequently observed in MVCs ≥4 mm with statistical significance.

The cell block method is another useful approach to histology-like preparation (8, 9). Cell block preparation can be applied to not only solid samples but also liquid samples, such as IPMN mucin and pancreatic juice. Tiny specks that cannot be detected macroscopically or stereoscopically are often involved in cell block specimens. No special techniques or knowledge are required for doctors on site. They simply expel the aspirated materials into a saline or formalin bottle. Of note, the material remaining after whitish sections

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have been macroscopically or stereoscopically extracted can be used for cell block preparation.

When the lesion need to be diagnosed in detail, histological preparation is preferable. The isolation of apparently preferable sections and the cell block method are ways of improving the pathological accuracy with histological preparation. However, these methods cannot be used to confirm the successful acquisition of appropriate samples. In contrast, a rapid on-site cytology evaluation, which is used to confirm successful acquisition, can provide a simple diagnosis, such as adenocarcinoma, but sometimes wastes valuable sections that might be useful for immunohistochemical searches when histologically prepared. The ideal methodologies for confirming the successful acquisition of sufficient tissues with a minimal puncture number should be further explored.

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