

Usefulness of quantitative elastography in the diagnosis of solid lesions of the páncreas

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Solid pancreatic lesions (SPL) generally have survival rates of less than 5% at five years, despite advances in diagnostic methods⁽¹⁾.

With the advent of endoscopic ultrasonography (EUS) associated with fine-needle aspiration biopsy (FNA), the diagnosis of pancreatic lesions has improved remarkably, with reported sensitivity and specificity between 85% and 100%, respectively. However, it is a demanding technique with bleeding, infection, and acute pancreatitis complications. Furthermore, it is relatively common for false negatives to be reported (20%–40%) in patients with SPL, especially those with chronic pancreatitis, becoming a diagnostic challenge^(2,3).

Given the limitations of EUS with FNA, new technologies have been developed that help improve its diagnostic performance, such as contrast media, confocal endomicroscopy, and elastography.

Elastography is a technique that assesses the hardness of tissues through their elasticity, like virtual palpation⁽⁴⁾. The first to evaluate pancreatic elastography in the pancreas was Giovannini in 2006 in a study with 49 patients. He employed a scale of 1 to 5 to define different patterns from normal tissue (1) to adenocarcinoma (5), with a 100% sensitivity but a 67% specificity. He described it as a new application of EUS to differentiate benign tissue from malignant lesions⁽⁵⁾. Iglesias *et al* conducted a study with 130 patients, reporting a scale of 1 to 4 to differentiate a normal pancreas from a pancreas tumor⁽²⁾, as Giovannini reported.

Elastography features two evaluation patterns: qualitative and quantitative. Qualitative elastography assesses the hardness of tissues by interpreting a color map: green represents medium stiffness, red is the softest, and blue is the most rigid⁽⁶⁾. It shows high sensitivity in assessing solid lesions of the pancreas (95%–98%) but a low sensitivity (42%–76%), which makes it a valuable tool for diagnosis⁽⁷⁾. Quantitative elastography measures the hardness of the target tissue by comparing it with a reference area around the lesion to calculate the strain ratio (SR) and the histogram; thus, the benign or malignant nature of lesions is determined⁽⁶⁾.

The histogram assesses the hardness of the tissue on a selected area that contains at least 50% of the lesion, without a reference tissue; the software converts the selected image into a color scale that determines the hardness of the tissue (0 [hard] to 255 [soft])⁽⁷⁾. Various cut-off points have been reported in the histogram for the differential diagnosis of pancreatic lesions, including values greater than 80 as benign and less than 80 as malignant⁽⁷⁾. Iglesias *et al* described a cut-off point of less than 50 for malignancy,

with accuracy greater than 98%⁽⁸⁾. Popescu *et al* informed a sensitivity for the histogram of 93.4%–91.4%, with a variable specificity of 66%–87.9% and a cut-off point of 175^(6,9).

The SR measures the target against a reference area using tissue around the pancreas⁽⁶⁾. The studies reported different cut-off points in the SR to classify pancreatic lesions. In 2011, Itokawa *et al* conducted a study with 109 patients. They reported an SR of 23.6 for non-malignant pancreatic masses and 39.08 for pancreatic cancer, with 85% sensitivity and 91% specificity⁽¹⁰⁾. In 2017, Kim *et al* found an SR of 3.78 for normal pancreas, 8.2 for chronic pancreatitis, and 21.8 for pancreatic cancer, with 95% sensitivity and 96% specificity to diagnose malignancy⁽¹¹⁾. Iglesias *et al* described a cut-off point for SR greater than 10 to determine pancreatic lesions as malignant with a diagnostic accuracy of 98%⁽⁸⁾. Dawwas *et al* stated a 100% sensitivity with a poor specificity of 16%⁽⁹⁾. Several meta-analyses have been carried out to determine the usefulness of elastography in diagnosing pancreatic lesions, reporting a high sensitivity between 95% and 99%, with a variable specificity of 67%–76%⁽⁹⁾.

This variability in the cut-off point has been related to a lack of standardization in locating the reference point^(6,9). Other limitations reported in performing elastography are artifacts, reverberation, dependence on the operator, interobserver variability, and nonuniform commercial systems⁽¹²⁾.

A prospective cross-sectional study with 71 patients carried out by doctors Martín Gómez Zuleta, Oscar Ruiz, and Diego Cano—published in this issue—took 22 points as the cut-off point for SR in malignant pancreatic lesions,

finding a sensitivity of 94% and specificity of 89.3% in detecting solid malignant lesions of the pancreas. They concluded that the current utility of quantitative elastography in SPL is improving the accuracy of the FNA by selecting more objectively the most suspicious area for puncture.

Elastography in SPL diagnosis is very useful in providing guidance on the nature of lesions and performing an FNA directed to the most suspicious area for diagnosis, with high sensitivity rates reported. Several limitations of elastography were found, such as dependence on the operator, a nonstandard technique, interobserver variability, various cut-off points reported in the literature for both the histogram and the SR, and the different specificity rates available.

The limitations of the study carried out by Gómez *et al* are those listed in the general literature, as mentioned above, mainly determined by a nonstandard technique and a nonuniform cut-off point of the SR. Other limitations found were the procedures performed only by an endoscopist and in a single hospital, and it is not specified whether the samples were assessed by a pathologist expert in pancreatic pathology and in reading this type of sample. To highlight, a study with data from our population, with an adequate number of patients, uses a quantitative method such as SR, providing a lesion assessment less dependent on the operator.

Having better tools to diagnose pancreatic lesions will allow a timely diagnosis, avoid punctures that are not exempt from complications (which will also be reflected in the medical cost), and reduce the patient's anguish for not having a diagnosis of their disease to start treatment in time.

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