

CHRONIC PANCREATITIS AS SEEN BY ENDOSONOGRAPHY

FROM MORPHOLOGICAL DIAGNOSIS TO ADVANCED CHARACTERIZATION



Chronic pancreatitis (CP) is a progressive fibroinflammatory process of the pancreas that produces permanent structural alterations and can lead to pain, exocrine pancreatic insufficiency, and diabetes.

Diagnosing advanced disease is usually relatively straightforward when calcifications, glandular atrophy, and ductal abnormalities are evident. The real diagnostic challenge arises in early or non-calcifying chronic pancreatitis, when computed tomography (CT) and magnetic resonance imaging (MRI) may be normal or show minimal changes.

In this scenario, endoscopic ultrasound (EUS) occupies a privileged position due to its high resolution and the possibility of simultaneously evaluating:

- Pancreatic parenchyma.
- Main pancreatic duct.
- Secondary branches.
- Lithiasis and calcifications.
- Focal lesions.
- Complications of the disease.
- Possibility of tissue acquisition.

However, no single finding alone establishes a diagnosis of chronic pancreatitis. Interpretation must integrate morphological changes with the clinical context, risk factors, and pretest probability.

KEY MESSAGE

EUS has particular diagnostic value when there is clinical suspicion of chronic pancreatitis and conventional imaging is inconclusive.

PARENCHYMAL FINDINGS

Hyperechoic foci with acoustic shadowing: represent intraparenchymal calcifications and constitute a finding of high diagnostic value.

Hyperechoic foci without shadowing: are less specific and should be interpreted in conjunction with other criteria.

Fibrous bands: intraparenchymal hyperechoic lines.

Lobularity: lobed glandular architecture which, when marked, can adopt the characteristic honeycomb pattern.

Cysts: small anechoic intraparenchymal images.

WHAT SHOULD WE LOOK FOR IN ENDOSONOGRAPHY?

Endosonographic exploration should be performed systematically, evaluating the head, uncinate process, body and tail of the pancreas, as well as the entire course of the main pancreatic duct.

DUCTAL FINDINGS

The following should be evaluated during the exam:

- Intraductal calculi.
- Dilation of the main pancreatic duct.
- Irregular ductal contour.
- Hyperechoic ductal wall.
- Dilation of secondary branches.

The Rosemont criteria, which are the most widely used and validated, were developed to standardize this terminology and assign different diagnostic weight to endosonographic findings.

TIPS DURING THE EXPLORATION

Do not limit yourself to simply counting criteria.

Assess their **distribution, intensity, and agreement.**

Systematically examine the entire pancreas. Correlate parenchymal alterations with ductal alterations.

Actively search for focal lesions.

ROSEMONT CRITERIA

The Rosemont criteria classify endosonographic findings according to their diagnostic significance.

MAJOR CRITERIA

- Hyperechoic foci with shadow
- Pancreatic duct stones
- Lobularity with honeycomb structure

MINOR CRITERIA

- Cysts
- Dilation of the main duct
- Irregular duct outline
- Dilated secondary branches
- Hyperechoic ductal wall
- Bands
- Hyperechoic foci without shadow
- Lobularity without honeycomb

ROSEMONT CLASSIFICATION

The findings are ultimately grouped into four categories:

- Consistent with chronic pancreatitis
- Suggestive of chronic pancreatitis
- Indeterminate for chronic pancreatitis
- Normal

Rosemont allows for the standardization of endosonographic description.

There is interobserver and intraobserver variability, especially in minor findings and early disease.

RULE OF THUMB

≥5 EUS criteria: strongly support the diagnosis of chronic pancreatitis.

≤2 criteria: make the diagnosis unlikely.

3-4 criteria: constitute an intermediate diagnostic zone and should be carefully interpreted within the clinical context and other images.

KEY MESSAGE

Endosonography should not be interpreted solely by a mathematical count of criteria.

VIDEO

PANCREATITIS CRONICA DESDE LA ENDOSONOGRAFIA

https://qr.fy.io/r/x_HO5hwokk



EARLY CHRONIC PANCREATITIS: THE GREAT CHALLENGE

The high resolution of EUS allows the detection of subtle structural alterations before the classic changes of advanced chronic pancreatitis appear.

This characteristic is one of its greatest strengths, but also one of its main diagnostic risks.

DO NOT OVERDIAGNOSE

Minor endosonographic changes may be found in people without established chronic pancreatitis. Therefore:

- An isolated hyperechoic focus does not diagnose chronic pancreatitis.
- An isolated band does not diagnose chronic pancreatitis.
- A slight lobularity does not establish the diagnosis either.

Age and certain exposures or clinical conditions may be associated with nonspecific pancreatic changes that mimic some minor criteria for chronic pancreatitis. Therefore, the pretest probability is fundamental.

WHEN IS EUS PARTICULARLY USEFUL?

- *Persistent clinical suspicion with non-diagnostic CT/MRI.*
- *Recurrent acute pancreatitis without a defined etiology.*
- *Suspected chronic non-calcifying pancreatitis.*
- *Subtle ductal alterations.*
- *Need to rule out a neoplastic lesion.*

CONCEPT TO REMEMBER

In advanced chronic pancreatitis, multiple imaging methods can establish the diagnosis. In early disease, EUS can provide additional information, but it is precisely in these cases that we must be more cautious in its interpretation.

BEYOND MODE B: ELASTOGRAPHY AND EUS WITH CONTRAST

ELASTOGRAPHY

Progressive fibrosis modifies the mechanical properties of the pancreatic parenchyma and increases its rigidity.

EUS-associated elastography allows these modifications to be studied using different techniques.

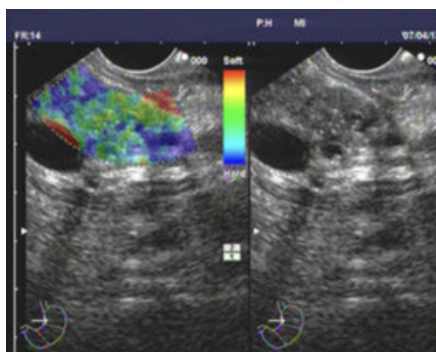


Figure 1.
Qualitative elastographic study showing a heterogeneous pattern with a predominance of green, characteristic of inflammatory masses in the context of chronic pancreatitis, in this case a lesion located in the body of the pancreas. (Graphics and text by Julio Iglesias and his group from Santiago de Compostela, published with permission).

STRAIN ELASTOGRAPHY

It allows for a relative assessment of tissue deformation and can provide additional information on parenchyma stiffness.

SHEAR-WAVE ELASTOGRAPHY

It allows a quantitative approach to tissue stiffness and constitutes one of the most interesting areas of research in the endosonographic evaluation of chronic pancreatitis.

Studies have shown an association between increased pancreatic stiffness and the degree of fibrosis.

IS IT NOW A NEW DIAGNOSTIC CRITERION?

Not yet.

Limitations remain related to:

- Standardization of the technique.
- Reproducibility.
- Differences between teams.
- Reference values.
- Absence of universally accepted cut-off points.

Therefore, it should currently be considered a complementary tool and not a substitute for conventional morphological assessment.

EUS HARMONICA WITH CONTRAST – CH-EUS

Contrast-enhanced harmonic ultrasound (CH-EUS) allows for the real-time study of pancreatic tissue microvascularization. Its greatest utility in the context of chronic pancreatitis arises when a **focal lesion or pancreatic mass** is present. Chronic pancreatitis can produce inflammatory masses that are difficult to distinguish from pancreatic ductal adenocarcinoma. CH-EUS and elastography provide complementary information on vascularization and tissue elasticity, respectively.

CHRONIC PANCREATITIS OR CANCER: THE QUESTION WE CAN'T GET WRONG

Chronic pancreatitis can significantly complicate the diagnosis of a focal pancreatic lesion.

When faced with a mass, we must carry out a systematic evaluation.

FROM MODE B

Appreciate:

- Outlines.
- Echogenicity.
- Size.
- Ductal dilation.
- Distal atrophy.
- Relationship with vascular structures.
- Lymphadenopathy.

ELASTOGRAPHY

A markedly rigid lesion increases suspicion of malignancy, but **does not by itself establish a diagnosis of cancer.**

CH-EUS

Pancreatic adenocarcinoma characteristically presents a hypoenhancement pattern, whereas some inflammatory masses may retain greater perfusion.

The information obtained must be integrated with conventional morphology and the clinical context.

EUS-FNB

When a focal lesion is suspected:

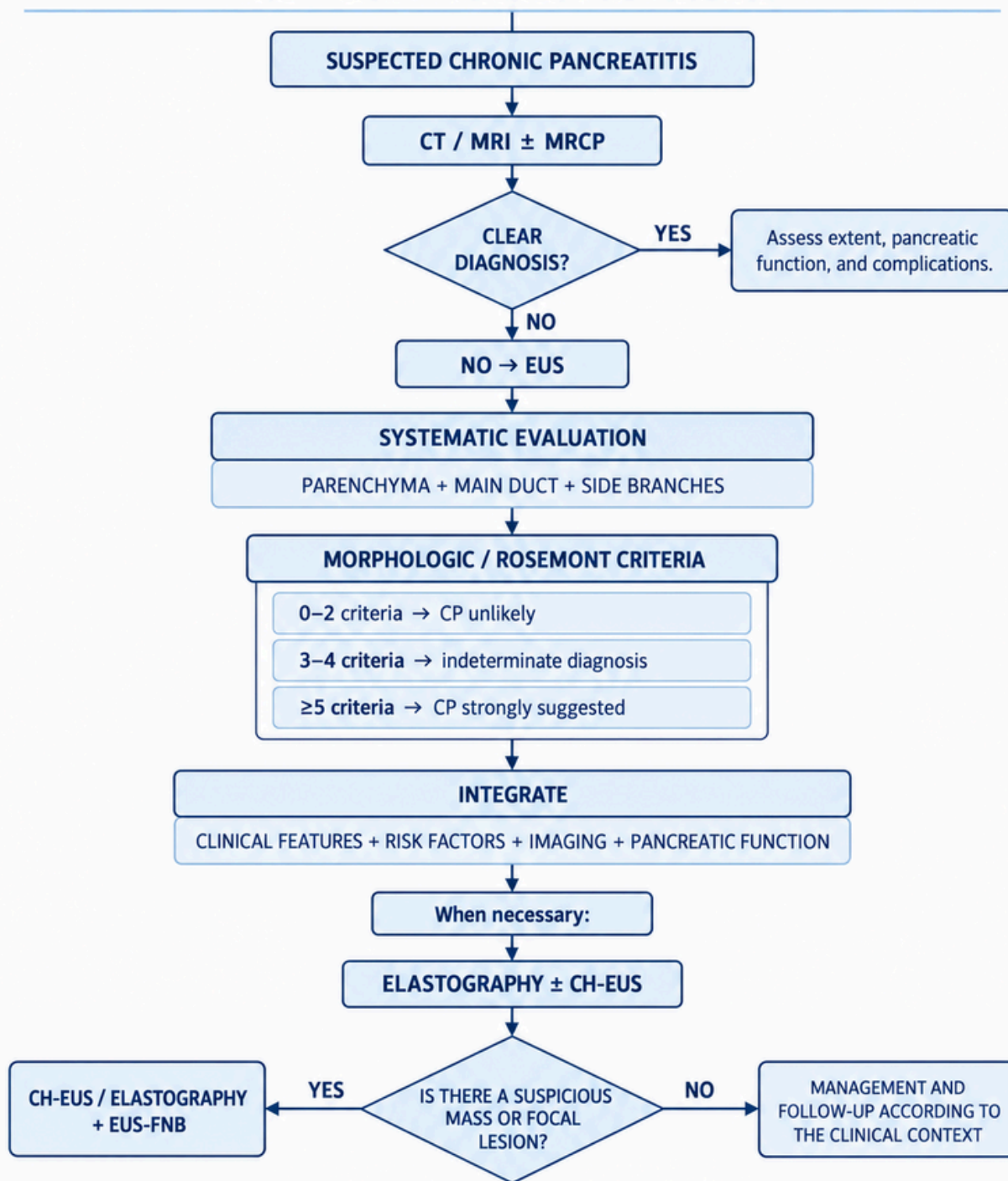
PURCHASE FABRIC

In the context of chronic pancreatitis, it is especially important to obtain an adequate histological sample and not rely exclusively on the endosonographic appearance.

SECURITY MESSAGE

A new mass in a patient with chronic pancreatitis should be considered potentially neoplastic until reasonably proven otherwise.

PRACTICAL ALGORITHM SUSPECTED CHRONIC PANCREATITIS



ARTICLE OF THE MONTH

International consensus guidelines on the role of diagnostic endoscopic ultrasound in the management of chronic pancreatitis

Wilcox CM, Gress T, Boermeester M, Masamune A, Lévy P, Itoi T, Varadarajulu S, et al. Pancreatology. 2020;20(5):822–827. DOI: 10.1016/j.pan.2020.05.025 PMID: 32631791

DIRECT ACCESS TO THE ARTICLE:

International consensus guidelines – DOI
<https://doi.org/10.1016/j.pan.2020.05.025>

MAIN MESSAGES

EUS is especially relevant in patients with suspected early chronic pancreatitis.

The Rosemont criteria allow for standardization of findings, but do not completely eliminate inter-observer variability.

The presence of five or more criteria strongly supports the diagnosis.

Two or fewer criteria make chronic pancreatitis unlikely.

Intermediate results require clinical integration and integration with other diagnostic methods.

CONCLUSIONS

Endosonography is a fundamental tool in the evaluation of chronic pancreatitis, particularly when structural disease is not yet evident by other imaging methods.

Its strength lies in the ability to simultaneously identify parenchymal and ductal alterations with high resolution.

However, EUS should not be reduced to simply counting criteria.

Interpretation should incorporate the distribution and intensity of findings, pretest clinical probability, and the results of other diagnostic modalities.

The Rosemont criteria provide standardization, although important limitations remain, especially in early chronic pancreatitis.

Elastography and contrast-enhanced harmonic EUS expand the possibilities for tissue characterization and will probably become progressively more relevant, although currently they should be considered complementary techniques.

Finally, in the case of a focal lesion in a patient with chronic pancreatitis, the fundamental objective changes:

IT IS NOT TO PROVE PANCREATITIS.

IT IS NOT TO OVERLOOK PANCREATIC CANCER.

CONFERENCIA DE PANCREATITIS
CRONICA DESDE LA ENDOSCOPIA

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VIDEO · CONFERENCE



**ELUXEO 8000
SYSTEM**

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