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# Evaluation of elasticity of the pancreas by Acoustic Radiation Force Impulse (ARFI) in acute pancreatitis patients: A systematic review and meta-analysis (protocol)

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## ABSTRACT

Acute pancreatitis (AP) is characterized by inflammation of the pancreas(1). The morbidity of AP is reported about 5-80/100000 people/year (2). An increase in the incidence of AP has been also reported (3-9). The mortality rate has been reported to be 1.7-8.4% (10, 11), and AP still remains a life-threatening disease. Clinical symptoms and elevated levels of pancreatic enzymes constitute the main diagnostic features of this condition.(12, 13) Early diagnosis and treatment are important, and reliable imaging techniques are required for a diagnosis of acute pancreatitis.

Acoustic radiation force impulse (ARFI) elastography is a promising ultrasound-based imaging modality for the evaluation of tissue stiffness including in the diagnosis of AP (14). Studies using the ARFI elastography evaluated different abdominal organs(15), especially in pancreatic disease, such as AP, chronic pancreatitis, or pancreatic carcinoma, relevant higher shear wave velocities than in healthy pancreas parenchyma are described(1, 16, 17). In this study, we evaluated acoustic radiation force impulse (ARFI) elastography, Virtual Touch tissue quantification (VTQ; Siemens Medical Solutions, Mountain View, CA), to diagnose acute pancreatitis. The consistency of the pancreatic parenchyma usually becomes stiffer in acute pancreatitis as compared to the healthy pancreas, which is identifiable with Shear Wave Elastography (SWE), including ARFI (18, 19). However, studies using elastographic techniques in patients with acute pancreatitis are conflicting(19). One prospective study failed to find significant differences in pancreatic shear wave velocities between patients with AP and healthy volunteers(14, 19). Three other studies showed significantly higher pancreatic shear wave velocities in patients with acute pancreatitis compared to persons with the normal pancreas(1, 18-20).

The present study will aim to assess the effectiveness of ARFI elastography in the form of ARFI-VTQ imaging in characterizing and differentiating normal pancreas and acute pancreatitis.

## ATTACHMENTS

[KR\) ARFIprotocol](#)  
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## KEYWORDS

Acute Pancreatitis, Acoustic Radiation Force Impulse, Elasticity Imaging Techniques

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