Evaluation of Ultrasound Based Acoustic Radiation Force Impulse (ARFI) and eSie Touch Sonoelastography for Diagnosis of Inflammatory Pancreatic Diseases

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ABSTRACT

Context Pathology changes the consistency of the tissues. Objective To prospectively assess the accuracy of per-abdominal US Elastography in the form of ARFI- VTQ (acoustic radiation force impulse-virtual touch tissue quantification) and eSie Touch elasticity imaging in characterizing and differentiating inflammatory pancreatic diseases. Patients 166 patients from among the patients that visited the Asian Institute of Gastroenterology, Hyderabad, India, during the period April, 2009 to December, 2010, for master health check-up, blood donation and those with pancreatic pathology. Based on the clinical symptomatic criteria and diagnostic imaging findings, the patients were divided into normal, chronic and acute/acute resolving pancreatitic group. The ultrasound based ARFI-VTQ and eSie Touch elasticity imaging techniques were applied. Design Prospective single-center study. Results The mean ARFI-VTQ values were 1.27 m/s, 1.25 m/s and 3.3m/s for the normal, chronic and acute pancreas, respectively. The eSie Touch grey scale and color elastograms were white to light grey and green/purple to yellowish green, respectively for both normal and chronic pancreas, while for acute pancreas the elastograms were dark black on grey scale and dark red on color scale. Conclusion Both the ARFI-VTQ and eSie Touch elasticity imaging techniques may be successfully adopted to diagnose acute pancreatitis, assess extent of inflammation - whether focal or diffuse, assess peripancreatic edema, identify presence of necrotic areas and early pseudo cyst formation, early diagnosis in acute recurrent attacks and monitor patient’s response to treatment. Further modifications in the present technology to differentially diagnose the chronic from normal pancreatic tissue are awaited.