

Quantitative contrast-enhanced ultrasonographic assessment of naturally occurring pancreatitis in dogs

ABSTRACT

Background: Quantitative contrast-enhanced ultrasonography (CEUS) can detect pancreatic perfusion changes in experimentally induced canine pancreatitis. However, its usefulness in detecting perfusion changes in naturally occurring pancreatitis is unclear.

Hypothesis/Objectives: To determine the feasibility of using CEUS to detect pancreatic and duodenal perfusion changes in naturally occurring canine pancreatitis.

Animals: Twenty-three client-owned dogs with pancreatitis, 12 healthy control dogs.

Methods: Dogs diagnosed with pancreatitis were prospectively included. CEUS of the pancreas and duodenum were performed. Time-intensity curves were created from regions of interest in the pancreas and duodenum. Five perfusion parameters were obtained for statistical analyses: time to initial up-slope, peak time (Tp), time to wash-out (TTW), peak intensity (PI), and area under the curve (AUC).

Results: For the pancreas, Tp of the pancreatitis group was prolonged when compared to controls (62 ± 11 seconds versus 39 ± 13 seconds; $P < .001$). TTW also was prolonged but not significantly (268 ± 69 seconds versus 228 ± 47 seconds; $P = .47$). PI and AUC were increased when compared to controls (95 ± 15 versus 78 ± 13 MPV; $P = .009$ and $14,900 \pm 3,400$ versus $11,000 \pm 2,800$ MPV*s; $P = .013$, respectively). For the duodenum, PI and AUC were significantly increased in the pancreatitis group when compared to controls.

Conclusions and Clinical Importance: Contrast-enhanced ultrasonography can detect pancreatic perfusion changes in naturally occurring canine pancreatitis characterized by delayed peak with prolonged hyperechoic enhancement of the pancreas on CEUS. Additionally, duodenal perfusion changes secondary to pancreatitis were observed.

Keywords: Contrast-ultrasound; Inflammation; Pancreas; Perfusion