

AbstractID: 3571 Title: Computerized texture analysis of abnormal areae gastricae on double-contrast barium examinations

Purpose:

Abnormal areae gastricae occur in the body due to gastritis. Very frequently, gastritis is caused by the *Helicobacter Pylori* bacteria, in which case it can be treated with antibiotics. The purpose of this study is to assess the ability of computerized radiographic texture analysis to recognize the presence of abnormal areae gastricae. Potentially, this could aid radiologists in classifying radiographic features of the areae gastricae in pathologic states.

Method and Materials:

Digitized double-contrast radiographs for 23 cases were obtained. Each case was classified as normal or abnormal based on clinical symptoms and the results of endoscopic examination, H Pylori testing, and/or barium examination. Similar locations of the gastric area were selected on each image from the lower region of the stomach. These regions were then divided into 64 x 64 and 128 x 128 regions of interest (ROI) for texture analysis. Standard deviation, and Fourier and Fractal based features were calculated for all ROIs. ROC analysis was performed on the results to test the ability to distinguish between normal and gastritic cases, using round-robin analysis..

Results:

The texture analysis showed that there is a separation between the normal and abnormal cases. For 64 x 64 ROIs, ROC analysis yielded Az values in a range of 0.54 to 0.80 for single features and a range of 0.70 to 0.806 for multiple features. For 128 x 128 ROIs, single feature ROC analysis yielded Az values in a range of 0.55 to 0.85 for single features and a range of 0.77 to 0.8694 for multiple features.

Conclusion:

The results indicate that radiographic texture analysis of digitized double-contrast radiographs have the potential to distinguish between normal and abnormal cases of areae gastricae.

Conflict of Interest (only if applicable): ML Giger is a shareholder in R2 Technology, Inc., Sunnyvale, CA.