



“Method of objective analysis of echogenicity of insulinomas” EUS-image.

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Background:

How do you estimate homogeneity and the level of echogenicity of endoscopic ultrasound (EUS) images? Do you have a proof-right method? Unfortunately, we have not found it anywhere, so our aim was to create simple and easily reproduced method of objective estimate of the EUS-image echogenicity, suitable for mathematical analysis and statistical data processing.

Materials and methods:

We have done retrospective analysis of the EUS-images of pancreatic insulinomas, obtained by echo-endoscope with mechanical probe and without “histogram”-function. We had videodata, saved as photo, film and digital images. All data were digitized and processed in the Photoshop. Each insulinoma was outlined by instrument “lasso”. Two parameters were chosen from the window of the histogram – mean value and deviation. Within the same image, we outlined part of surrounding pancreatic parenchyma at an equal distance from the probe, which was analyzed in the same way.

Results:

Using our own formulas, we compared mean value and deviation for tumor and parenchyma. We have created a table, which allowed obtain automatically parameters that determine homogeneity and level of echogenicity of insulinoma. The whole comparative analysis (from the Photoshop to the essential parameters) does not exceed 10 minutes. When working with equipment, fitted in with histogram function, analysis of echo-homogeneity and level of echogenicity can be done in real time.

Conclusions:

We have developed simple and easily conducted method of objective analysis of echo-homogeneity and level of echogenicity for echo-endoscopes either with the function of histogram or without it.