Recent advances in diagnostic EUS for pancreaticobiliary diseases

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EUS and EUS-FNA in the diagnosis of pancreatic carcinoma have been remarkably developed for last decade. High accuracies of EUS for T-staging especially in the diagnosis of portal venous involvement have been reported. In addition, at the same time, EUS-FNA can provide tissue diagnosis with high sensitivity and specificity.

However, the utility of EUS in T-staging of pancreatic carcinoma is now tapered by the recent advances of multi-detector row computed tomography. Reported overall accuracies of MDCT for T-staging are equivalent to EUS. In addition, it has been reported the sensitivity of EUS-FNA to detect pancreatic carcinoma in the setting of chronic pancreatitis is unacceptable low.

How can we overcome these limitations of EUS/EUS-FNA in the diagnosis of pancreatic carcinoma? Recently second generation ultrasonographic contrast, Sonazoid which is perflubutane micro-bubble has been developed to diagnose hepatocellular carcinoma during abdominal ultrasound in Japan. This novel contrast can produce harmonic signals at low acoustic power, making it suitable for utilization during EUS. We have evaluated if contrast enhanced harmonic EUS (CE-EUS) can add new information in preoperative T-staging for pancreaticobiliary malignancies. In our study, the overall accuracy of CE-EUS was significantly higher than conventional harmonic EUS1). In addition, the specialized software which is installed into EUS processor, Aloka alpha-10, and makes quantitative perfusion analysis of region of interest (ROI) possible has been developed. It can generate time intensity curve to depict the changes in signal intensity over time within a particular ROI. We have conducted comparison study of base intensity, peak intensity, peak time and maximum intensity gain of pancreatic carcinoma and chronic pancreatitis. Peak intensity and maximum intensity gain of mass lesion in chronic pancreatitis was significantly higher than pancreatic carcinoma. Therefore, quantitative perfusion analysis of time intensity curve might improve accuracy of differential diagnosis between pancreatic carcinoma and chronic pancreatitis.

In conclusion, these novel EUS technologies using contrast may allow us to overcome major challenges associated with the diagnosis of pancreatic carcinoma.
Reference