Updates on EUS in pancreaticobiliary disease - Therapeutic EUS –

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Abstract

Interventional EUS is widely accepted for not only tissue diagnosis but also treatment in patients with abnormalities of various organs. Nowadays, EUS-guided therapy as the EUS-guided fine needle injection (FNI) (e.g. celiac nerve plexus neurolysis, anti-tumoral therapy), stenting (e.g. pancreatic pseudocysts drainage via gastrointestinal wall) are clinically performed for pancreaticobiliary disease.

EUS-guided fine needle injection (EUS-FNI) as the treatment has expanded the clinical utility of EUS. Several applications of EUS-FNI for anti-cancer include celiac nerve block and drug delivery into tumors, such as ablation, chemotherapy, gene therapy, and cytoimplantation. Especially, anti-tumoral EUS-FNI, with its minimally invasive access for anti-tumoral agent delivery, is the most exciting field of interventional EUS. These procedures are divisible onto 3 categories based on the associated therapeutic mechanism, physicochemical therapy, molecular biological therapy, and immunological therapy. Since Chang et al. firstly reported EUS-FNI for advanced pancreatic cancer in 2000, various anti-tumoral agents have been injected directly into tumors. Recently, we performed EUS-FNI using dendritic cells (DCs) for cancer treatment as immunotherapy. Actually, DCs are potent antigen-presenting cells for induction of primary T-cell-dependent immune response. When injected intratumorally, DCs acquire and process tumor antigens in situ, migrate to regional lymphoid organs, and initiate a strong tumor-specific immune response. Seven patients with metastatic disease and/or locally advanced pancreatic cancer who had previously been treated unsuccessfully with gemcitabine were undergone EUS-FNI of DCs into pancreatic cancer. The result was tolerable (median survival period was 9.9 months) nevertheless the objective patients
were resistant to gemcitabine.

The recent progression of interventional EUS also enables EUS–guided transmural drainage. Prior to development of EUS–guided drainage procedures, the options for treating obstruction of pancreatobiliary system or pancreatic pseudocyst included surgical drainage, percutaneous drainage using ultrasound and radiologic guidance, and endoscopic (non EUS–guidance) transmural drainage. Today, using EUS guidance and dedicated accessories, it is possible to create bilio, pancreato, or pseudocyst-digestive anastomosis, EUS–guided biliary drainage, EUS-guided pancreatic drainage, and EUS-guided pancreatic pseudocyst drainage. These procedures are anticipated for use as alternatives to surgery or percutaneous drainage.

Demonstrably, EUS-guided intervention has opened new and exciting clinical applications for the management of pancreatobiliary disease. For greater development in this field, it is anticipated that endosonographers, basic scientists, and engineers will collaborate fruitfully with much greater mutual effort.