Feasibility and safety of EUS-guided radiofrequency ablation in treatment of locally advanced, unresectable pancreatic cancer

Dear Editor,

Local radiofrequency ablation (RFA) technology is being developed as supplementary therapy in multimodal therapy strategy of unresectable nonmetastatic tumor.[1] However, the clinical application of intraoperative or percutaneous RFA for pancreatic ductal adenocarcinoma (PDAC) is limited due to higher mortality and incidence of adverse events.[2] Hence, we did a study to evaluate the feasibility and safety of EUS-guided RFA (EUS-RFA) for locally advanced, unresectable PDAC.

Eight patients with unresectable PDAC (mean age: 74.3 ± 6.3 years; 5 [62.5%] males) who underwent EUS-RFA were included. Five tumors located in the pancreatic head, two in the pancreatic body, while one in the pancreatic tail. The Habib™ EUS RFA probe (EMcision Ltd., London, UK) was properly placed into the target lesion, and the RFA was performed within 90–120 s at 5 W under real-time EUS surveillance. The mean time of a single RFA session was 226.3 s (120–360 s), with a mean number of applications of 2.4 (range 1–4). Seven patients with severe neoplastic pain underwent EUS-guided celiac plexus neurolysis (EUS-CPN) during the same session before the RFA procedure. The mean tumor sizes measured by EUS 1-month postprocedure were significantly reduced than that at preprocedure (46.9 mm × 38.1 mm *vs.* 39.5 mm × 29.5 mm); the pancreatic cancer mass was reduced by 34.3% 1 month after RFA treatment. The mean survival of the patients after EUS-RFA was 10.7 months and 16.1 months from the diagnosis [Table 1]. All patients did not have serious early adverse events. Only mild abdominal pain and mild pancreatitis occurred, suggesting that the power of 5 W and the time of 90–120 s were safe. Six patients received CPN before RFA and the abdominal pain was significantly relieved. This suggests that EUS-CPN could perform with EUS-RFA together.

The limitation of this study is that there is no control group and it is a single-center study with a small sample size. Randomized, large-sample, multicenter studies are

Table 1. EUS-radiofrequency ablation procedure details, change of tumor size and level of CA19-9, progression-free survival, and overall survival of the patients

Case	Tumor location	Number of passages	Application time and power	Tumor size perprocedure (mm)	Tumor size postprocedure 1 month (mm)	CA19-9 perprocedure (U/L)	CA19-9 postprocedure 1 month (U/L)	PFS after RFA (months)	OS after RFA (months)
1	Head	2	5 W 100 s For each pass	46×38	35×25	4570	1560	5	7
2	Head	3	5 W 90 s For each pass	58×47	45×32	3450	1130	8	15
3	Body	4	5 W 90 s For each pass	55×43	50×40	3290	2350	7	14
4	Head	2	5 W 100 s For each pass	42×38	38×25	1900	850	8	13
5	Tail	3	5 W 90 s For each pass	47×38	40×32	2870	1430	3	6
6	Body	1	5 W 120 s	38×32	33×24	1980	1070	9	16
7	Head	3	5 W 90 s For each pass	49×35	41×32	2380	1670	5	9
8	Head	1	5 W 120 s	40×34	34×26	2450	890	2	5

PFS: Progression-free survival; RFA: Radiofrequency ablation; OS: Overall survival

needed to shed light on the efficacy of EUS-RFA, to optimize RFA parameter (such as ablation time, power, and interval time), and to explore whether the survival time of patients can be further improved by RFA and combined chemotherapy.

In conclusion, EUS-RFA is a feasible and safe treatment for unresectable locally advanced pancreatic cancer, especially for patients with multiple comorbidities who were intolerance to chemotherapy due to side effects.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patients have given their consent for their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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