Secretin Stimulating MRCP: The Evaluation of a Pancreaticobiliary Reflux

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Purpose: Pancreatobiliary reflux (flow of pancreatic juice in to the biliary tract) usually occurs in patients with pancreaticobiliary maljunction. Pancreaticobiliary reflux of the pancreatic juice is the essential for the biliary malignancies as the complication of pancreaticobiliary maljunction. Recently, pancreatobiliary reflux was encountered in patients with a normal pancreaticobiliary junction in which pancreatobiliary reflux was demonstrated by secretin stimulating MRCP. ERCP can not diagnose pancreaticobiliary reflux without pancreaticobiliary maljunction because of the absence of a morphological abnormality. We investigated that secretin-stimulating MRCP (SMRCP) can diagnose pancreaticobiliary reflux with or without pancreaticobiliary maljunction.

Methods and Materials: 20 patients who underwent ERCP, SMRCP and measurement of the value of amylase in the collected bile were included in this study. When the ERCP was performed, bile was collected from the CBD and the value of amylase in the collected bile was measured. The value of amylase in the collected bile was assigned as a gold standard of a pancreaticobiliary reflux in this study. Sequence parameters of MRCP were described below: single-shot fast spin echo, TE= maximum, slice thickness= 20- 30 mm, field of view= 20 cm, two slice locations (gallbladder and papilla of Vata). The method of SMRCP: MRCP images were obtained every 15 seconds for 10 minutes after bolus injection of secretin (Secrepan; Eisai, Tokyo, Japan) at a dose of 50 units. Multi-slice axial MRCP was also performed before and after injection of secretin. Morphological evaluation of a pancreaticobiliary junction was performed by the ERCP. The SMRCP images were pegged at positive (reflux was present) when the enlargement of gallbladder or CBD was demonstrated after injection of secretin. ERCP and SMRCP images were evaluated blindly. The final diagnosis of a pancreaticobiliary reflux was given when the value of amylase in the collected bile was higher than 1000 IU/L. ERCP and SMRCP findings were compared with the value of amylase in the collected bile.

Results: SMRCP was positive in 10 cases and negative in remaining 10 cases. The results of ERCP were that 5 cases were pegged at a pancreaticobiliary maljunction and remaining 15 cases pegged at a normal pancreaticobiliary junction. The value of amylase in the collected bile was higher than 1000 IU/L in 7 patients (mean: 54082 IU/L) and lower than that (mean: 56 IU/L) in 13 patients, so the former 7 patients were diagnosed as a pancreaticobiliary reflux. In the patients with a pancreaticobiliary reflux, 2 patients were missed by ERCP (relative sensitivity 71%, 5/7) because of a normal pancreaticobiliary junction, whereas one patient was missed by SMRCP (relative sensitivity= 86%, 6/7) who had a severe chronic cholecystitis. Two patients of a pancreaticobiliary reflux with a normal pancreaticobiliary junction who were missed by ERCP were pegged at positive on SMRCP. In the 13 patients without a pancreaticobiliary reflux, all patients were diagnosed as a normal pancreaticobiliary junction on ERCP (relative specificity= 100 %, 13/13), whereas 9 patients were pegged at negative on SMRCP (relative specificity= 69%, 9/13).

Conclusion: SMRCP is available to diagnose a pancreaticobiliary reflux, because it can evaluate not only morphologically but also functionally. SMRCP may get into a goldstadard method to evaluate the flow of pancreatic juice in the periampullar region.

		SMRCP	
		positive	negative
Value of Amylase in the collected bile	1000* >	6	1
	1000*<	4	9

		ERCP (morphological evaluation)	
		maljunction**	normal junction**
Value of Amylase in the collected bile	1000* >	5	2
	1000*<	0	13

*Note: IU/L

**Note: It means pancreaticobiliary maljunction and normal pancreaticobiliary junction.