Recent advances in MDCT and MRI have made it possible to more easily detect and characterize pancreatic tumors [3]. Among these techniques, MDCT is widely used as the initial imaging technique of choice for pancreatic imaging. Once pancreatic lesions are found on MDCT, MRI and endoscopic ultrasound (EUS) can be used for further characterization. MRI with MR cholangiopancreatography (MRCP) has been accepted as a useful imaging technique for evaluating cystic lesions because of its excellent soft-tissue contrast [4]. However, because of its high spatial resolution, EUS is valuable for precisely showing internal structures such as septa and mural nodules [5]. To our knowledge, there have been no comparative studies of MRI and EUS for the characterization of pancreatic cystic tumors. The purpose of this study was to compare the diagnostic performances of MRI and EUS for the characterization of cystic pancreatic lesions and prediction of malignancy.

Comparison of MRI and Endoscopic Ultrasound in the Characterization of Pancreatic Cystic Lesions

OBJECTIVE. The purpose of this study was to compare the diagnostic performance of MRI and endoscopic ultrasound (EUS) for the characterization of cystic pancreatic lesions and prediction of malignancy.

MATERIALS AND METHODS. Fifty patients (24 women and 26 men; average age, 57 years) underwent both MRI and EUS. All pancreatic lesions (21 cystic and 29 solid lesions) were proven by histopathologic analysis. Two radiologists retrospectively examined MR images, and a single gastroenterologist reviewed EUS images. The MRI and EUS characterizations of morphologic features of the cystic lesions and predictions of malignancy were evaluated. The prediction of malignancy was done by receiver operating characteristic (ROC) curve analysis.

RESULTS. There was no difference between the ability of MRI and EUS to correctly classify lesions as cystic or solid (accuracy, 90–98% vs 88%; p > 0.05). There was no difference between the sensitivity of MRI and EUS for the characterization of septa (94.4% for MRI vs 77.8% for EUS), mural nodule (66.7–58.3% for MRI vs 58.3% for EUS), main pancreatic duct dilatation (92.9–85.7% for MRI vs 85.7% for EUS), and communication with main pancreatic duct (100% for MRI vs 88.9% for EUS). The area under ROC curve values for predicting malignancy showed no statistical significance (0.755–0.774 for MRI vs 0.769 for EUS; p > 0.894).

CONCLUSION. MRI and EUS are comparable in the characterization of cystic pancreatic lesions and prediction of malignancy.

As a result of the widespread use of cross-sectional imaging, cystic masses in the pancreas are being detected with greater frequency. Although cystic tumors of the pancreas constitute only 1–5% of malignant pancreatic neoplasms, recognition of these tumors is important because management plans depend on clinical and imaging diagnoses [1, 2]. Cystic pancreatic tumors commonly encountered in clinical practice include serous cystadenomas, mucinous cystic neoplasms, and intraductal papillary mucinous neoplasms. Among them, mucinous cystic neoplasms are regarded as potentially malignant tumors, and intraductal papillary mucinous neoplasms may be either benign or malignant. Surgical resection should be considered initially as a curative treatment for malignant or potentially malignant lesions. Therefore, the accurate differentiation of lesions as benign, potentially malignant, or malignant should help clinicians establish proper treatment plans.

Recent advances in MDCT and MRI have made it possible to more easily detect and characterize pancreatic tumors [3]. Among these techniques, MDCT is widely used as the initial imaging technique of choice for pancreatic imaging. Once pancreatic lesions are found on MDCT, MRI and endoscopic ultrasound (EUS) can be used for further characterization. MRI with MR cholangiopancreatography (MRCP) has been accepted as a useful imaging technique for evaluating cystic lesions because of its excellent soft-tissue contrast [4]. However, because of its high spatial resolution, EUS is valuable for precisely showing internal structures such as septa and mural nodules [5]. To our knowledge, there have been no comparative studies of MRI and EUS for the characterization of pancreatic cystic tumors. The purpose of this study was to compare the diagnostic performances of MRI and EUS for the characterization of cystic pancreatic lesions and prediction of malignancy.
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Materials and Methods

Patient Population

This retrospective study was approved by our institutional review board, and the requirement for informed consent was waived. We retrospectively analyzed the EUS reports of 123 consecutive patients who underwent EUS from December 2004 to March 2008 as a result of the detection of focal pancreatic lesions on CT or ultrasound. The study population was selected according to the following inclusion criteria: both EUS and MRI were performed within 1 month of surgery or biopsy, the interval between EUS and MRI was less than 1 month, and the pancreatic lesions were pathologically confirmed. Seventy-three patients were excluded because MRI was not performed (n = 31) or histopathologic confirmation was not obtained (n = 42). A total of 50 pancreatic lesions were pathologically confirmed by surgery or biopsy. There were 26 men and 24 women, with a mean age of 57 years (age range, 19–87 years).

Cystic pancreatic lesions were identified when the lesion was round or lobulated, was sharply demarcated from the surrounding parenchyma, and had a smooth wall. Lesions with cystic portions larger than 50% by area on histopathologic examination were regarded as cystic. Twenty-one patients had cystic pancreatic lesions, with the following breakdown by type: 11 intraductal mucinous cystic neoplasms, five serous cystadenomas, three solid pseudopapillary tumors, one mucinous cystic neoplasm, and one dermoid cyst. All cystic lesions were confirmed by surgery. Distal pancreatectomy was undertaken in nine patients, Whipple procedure in six patients, segmental resection of the pancreas body and tail in five patients, and pylorus-preserving pancreaticoduodenectomy in one patient. The mean interval between MRI and surgery was 25 days, and the mean interval between EUS and MRI was less than 1 month, and the pancreatic lesions were pathologically confirmed. Seventy-three patients were excluded because MRI was not performed (n = 31) or histopathologic confirmation was not obtained (n = 42). A total of 50 pancreatic lesions were pathologically confirmed by surgery or biopsy. There were 26 men and 24 women, with a mean age of 57 years (age range, 19–87 years).

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We detected solid pancreatic lesions without cystic portions in the other 29 patients with pancreatic lesions. Of these, there were 27 adenocarcinomas, one solid pseudopapillary tumor, and one neuroendocrine carcinoma. Surgeries (n = 19) and biopsies (n = 10) were performed according to the locations, extent, and malignancies of the pancreatic lesions.

MRI Examination

MRI examinations were performed using a 1.5-T imaging system (Achieva 1.5 T Nova Dual, Philips Healthcare) equipped with commercially available four-channel phased-array coils (Synergy, Philips Healthcare). A 4-hour fast was recommended to all patients before examination. Neither antiperistaltic agents nor oral contrast agents were administered. The MRI protocol consisted of a breath-hold axial T1-weighted dual fast-gradient-recalled echo sequence (TR, 180; in-phase TE, 4.6; out-of-phase TE, 2.3; flip angle, 90°; field of view, 32–36 × 25–29 cm; matrix, 240 × 240; section thickness, 7 mm; slice spacing, 7.7 mm; one signal acquired; number of slices, 24), a T2-weighted single-shot turbo spin-echo (TR/TE, 452/80 and 160; field of view, 32–36 × 25–29 cm; matrix, 288 × 230; section thickness, 7 mm; slice spacing, 5 mm; scan slices were overlapped by 2 mm using an interleaved acquisition technique) with spectral fat suppression and a respiratory triggering technique, and a breath-hold true fast imaging evolution sequence with fat suppression. The sequence was started manually when the fluoroscopic sequence revealed that the contrast material bolus had reached the abdominal aorta. A 2D thick-slab single-shot turbo spin-echo sequence was used for obtaining an MRCP image (2,268.0/800; flip angle, 90°; field of view, 32–36 × 25–36 cm; matrix, 320 × 224; section thickness, 3 mm).

EUS Examination

After written informed consent, patients were given premedication with local pharyngeal anesthesia (2% lidocaine spray) and midazolam (3–5 mg IV). EUS examination was performed using an ultrasound scanner (EU-M30, Olympus) equipped with a 12-MHz radial transducer. The radial transducers (GFUM-240 and GFUM-2000, Olympus) had variable frequencies of 5, 7.5, 12, and 20 MHz, and the miniprobe (UM-3R, Olympus) had a frequency of 20 MHz. The miniprobes were usually used for lesions less than 10 mm in depth. The tip of the transducer featured a deaerated water-filled balloon that allowed the ultrasound beam to penetrate without hindering the air component. EUS was performed by an experienced gastroenterologist (12 years of experience) in all patients with focal pancreatic lesions detected on CT or ultrasound.

Image Analysis

All imaging analyses were retrospectively performed on a PACS workstation (Centricity 3.0, GE Healthcare). Two radiologists with 12 years and 8 years of experience, respectively, who were blinded to EUS findings and pathologic diagnoses, reviewed independently the MRI in the following sequence: T1-weighted images, axial and fat-suppressed T1-weighted images, contrast-enhanced T1-weighted images, and 2D and 3D MRCP images. Initially, each reviewer recorded whether the lesion appeared to be cystic or solid. Cystic pancreatic lesions were identified when the lesion was round or lobulated and sharply demarcated from the surrounding parenchyma, had a smooth wall, and had bright signal intensity on T2-weighted images. When each reviewer diagnosed a cystic pancreatic lesion, they independently recorded the presence of the following findings: septa, mural nodules, communication of the cystic lesion with the main pancreatic duct (MPD), and MPD dilatation. Finally, the reviewers recorded the malignant potential of the cystic pancreatic lesions using the following 5-point scale: 1, definitely benign; 2, possibly benign; 3, indeterminate; 4, probably malignant; and 5, definitely malignant [6]. Before image interpretation, all observers were informed that cystic lesions with a confidence rating from 3 to 5 were considered malignant in the calculation of sensitivity.

The same gastroenterologist (with 12 years of experience), who was blinded to MRI findings and pathologic diagnoses, reviewed the EUS images referring to the original EUS reports. The gastroenterologist differentiated cystic pancreatic lesions from solid lesions on EUS. When a well-margined anechoic lesion arising within the pancreatic parenchyma was seen on EUS, the lesion was defined as a cystic pancreatic lesion. The gastroenterologist then recorded the presence of septa, mural nodule, MPD dilatation, and communication of the cystic lesion with the MPD. Finally, the gastroenterologist recorded the malignant potential of the cystic lesions on a 5-point scale using the same criteria used for the MRI findings.
review of pathologic reports of surgical specimens. Cystic pancreatic lesions were identified when the lesion was round or lobulated and sharply demarcated from the surrounding parenchyma and had a smooth wall. A mural nodule was defined as a solid component arising from the wall and protruding into the cyst lumen [7]. A dilated MPD was defined as being larger than 3, 2, or 1 mm in the head, body, and tail, respectively [8–10]. Lesions meeting the following criteria were diagnosed as malignant: the mural nodule or solid portion was larger than 4 mm [11]; MPD dilatation was greater than 5 mm; or in the branch duct type of intraductal papillary mucinous neoplasms, the lesion was larger than 3 cm [12]. Communication of the cystic lesions with MPD was verified by both a review of the pathologic report and ERCP [6, 13].

**Statistical Analysis**

Sensitivity, specificity, and accuracy for characterizing cystic pancreatic lesions were calculated for MRI and EUS. Statistical analysis was performed with MedCalc software (MedCalc). Differences in the sensitivities and accuracies of the individual findings were compared using Fisher’s exact test. Receiver operating characteristic (ROC) curves were used to compare the performance of EUS with that of MRI for the prediction of malignancy; p values less than 0.05 were considered statistically significant.

Interobserver agreement was evaluated using kappa statistics. The kappa statistic is categorized as follows: 0–0.2, slight agreement; 0.21–0.4, fair agreement; 0.41–0.6, moderate agreement; 0.61–0.8, substantial agreement; and 0.81–1, almost perfect agreement.

**Results**

There were 21 pathologically proven cystic pancreatic lesions and 29 solid pancreatic lesions. With regard to the location of cystic pancreatic lesions in this study, three patients had diffuse involvement of intraductal papillary mucinous neoplasms. The most common location of 18 cystic pancreatic lesions was the body of the pancreas (n = 6). The locations of other cystic pancreatic lesions included the head (n = 5), neck (n = 3), tail (n = 3), and uncinate process (n = 1). The size of cystic pancreatic lesions ranged from 2 to 10.2 cm.

All of 21 pathologically proven cystic pancreatic lesions were classified as cystic lesion by both MRI reviewers, but the gastroenterologist classified 19 of 21 cystic pancreatic lesions as cystic and two as solid. Of 29 solid pancreatic lesions, the first MRI reviewer classified them as one cystic and 28 solid, the second MRI reviewer classified them as five cystic and 24 solid, and the gastroenterologist classified them as 25 solid and four cystic. Septa were detected on 17 of 18 lesions by both MRI reviewers and on 14 of 18 lesions by the gastroenterologist. Of the 12 mural nodules, eight were identified by the first MRI reviewer, whereas the second MRI reviewer and the gastroenterologist identified seven. MPD dilatation was detected on 13 of 14 lesions by the first MRI reviewer and on 12 of 14 lesions by both the second MRI reviewer and the gastroenterologist. Communication of the cystic lesions with the MPD was identified on nine of nine lesions by both MRI reviewers and on eight of nine lesions by the gastroenterologist.

There was no difference between the ability of MRI and EUS to correctly classify cystic lesions as cystic or solid; sensitivity was 100% for MRI and 90.5% for EUS (p > 0.05), specificity was 82.8–96.6% for MRI and 86.2% for EUS (p > 0.05), and accuracy was 90–98% for MRI and 88% for EUS (p > 0.05) (Table 1). In two patients with solid pseudopapillary tumor, the gastroenterologist classified masses as mostly solid with a partially small internal cystic change, whereas both MRI reviewers considered the lesion to have predominantly hemorrhagic and cystic

<table>
<thead>
<tr>
<th>Technique and Reviewer</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRI reviewer 1</td>
<td>21/21 (100)</td>
<td>28/29 (96.6)</td>
<td>49/50 (98)</td>
</tr>
<tr>
<td>MRI reviewer 2</td>
<td>21/21 (100)</td>
<td>24/29 (82.8)</td>
<td>45/50 (90)</td>
</tr>
<tr>
<td>EUS reviewer 1</td>
<td>19/21 (90.5)</td>
<td>25/29 (86.2)</td>
<td>44/50 (88)</td>
</tr>
</tbody>
</table>

Note—Data are the number of lesions detected/total number studied (%) by each imaging technique.

**Fig. 1**—19-year-old woman with solid pseudopapillary tumor in pancreas head.  
A, Axial T2-weighted MRI shows well-defined round high-signal lesion with thick walls in pancreas head.  
B, Axial T1-weighted MRI also shows high signal intensity.  
C, Endoscopic ultrasound shows lobulated and heterogeneous mass.  
D, Mass was pathologically confirmed as low malignant solid pseudopapillary tumor with large portions of hemorrhagic cystic degeneration.
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degeneration at MRI. The mass was pathologically confirmed to be a low malignant solid pseudopapillary tumor with extensive hemorrhagic cystic degeneration (Fig. 1).

There was no difference in the sensitivity for the characterization of septa (94.4% for MRI vs 77.8% for EUS; \( p > 0.05 \)), mural nodule (66.7–58.3% for MRI vs 58.3% for EUS; \( p > 0.05 \)), MPD dilatation (92.9–85.7% for MRI vs 85.7% for EUS; \( p > 0.05 \)), and communication with MPD (100% for MRI vs 88.9% for EUS; \( p > 0.05 \)) (Table 2). One MRI reviewer identified the mural nodule of the intraductal papillary mucinous neoplasms located in the tail, but the gastroenterologist also failed to identify this nodule (Fig. 2). The gastroenterologist misinterpreted one cystic pancreatic lesion as a solid lesion with internal cystic change because he did not detect communication of the lesion with the MPD. This communication was clearly identified by ERCP (Fig. 3). After surgery, the lesion was confirmed as an intraductal papillary mucinous neoplasm of the branch duct type with communication with the MPD.

The MRI interobserver agreement for classifying pancreatic lesions as cystic and solid was almost perfect (\( \kappa = 0.841 \)). Interobserver agreements for characterizing septa (\( \kappa = 0.618 \)), mural nodules (\( \kappa = 0.422 \)), MPD dilatation (\( \kappa = 1.00 \)), and communication with MPD (\( \kappa = 0.786 \)) between the two MRI reviewers ranged from moderate to almost perfect.

The area under the ROC curve values for each reviewer for predicting malignancy of cystic pancreatic lesions were 0.755 for the first MRI reviewer, 0.774 for the second MRI reviewer, and 0.769 for the gastroenterologist (Table 3). There were no statistically significant differences in area under the ROC curve values for predicting malignancy between MRI and EUS (first MRI reviewer vs gastroenterologist, \( p = 0.894 \); second MRI reviewer vs gastroenterologist, \( p = 0.969 \)). The interobserver agreement between the two MRI reviewers for predicting malignancy was substantial (\( \kappa = 0.767 \)).

Discussion

In our study, there was no statistically significant difference between the accuracy of MRI and EUS for characterizing septa (95.2% and 85.7%, for MRI reviewers 1 and 2, respectively; 80.6% for the gastroenterologist), mural nodules (71.4% for both MRI reviewers; 61.9% for the gastroenterologist), MPD dilatation (90.5% and 81.6% for MRI reviewers 1 and 2; 85.7% for the gastroenterologist), and communication with MPD (100% for MRI reviewers 1 and 2; 88.9% for the gastroenterologist).

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TABLE 2: Sensitivity and Accuracy of Characterization by MRI and Endoscopic Ultrasound

<table>
<thead>
<tr>
<th>Technique, Parameter</th>
<th>Septa</th>
<th>Mural Nodule</th>
<th>Main Pancreatic Duct Dilatation</th>
<th>Communication With Main Pancreatic Duct</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRI reviewer 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity</td>
<td>17/18 (94.4)</td>
<td>8/12 (66.7)</td>
<td>13/14 (92.9)</td>
<td>9/9 (100)</td>
</tr>
<tr>
<td>Accuracy</td>
<td>20/21 (95.2)</td>
<td>15/21 (71.4)</td>
<td>19/21 (90.5)</td>
<td>19/21 (90.5)</td>
</tr>
<tr>
<td>MRI reviewer 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity</td>
<td>17/18 (94.4)</td>
<td>7/12 (58.3)</td>
<td>12/14 (85.7)</td>
<td>9/9 (100)</td>
</tr>
<tr>
<td>Accuracy</td>
<td>18/21 (85.7)</td>
<td>15/21 (71.4)</td>
<td>17/21 (81.0)</td>
<td>19/21 (90.5)</td>
</tr>
<tr>
<td>Endoscopic ultrasound</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity</td>
<td>14/18 (77.8)</td>
<td>7/12 (58.3)</td>
<td>12/14 (85.7)</td>
<td>8/9 (88.9)</td>
</tr>
<tr>
<td>Accuracy</td>
<td>17/21 (81.0)</td>
<td>13/21 (61.9)</td>
<td>18/21 (85.7)</td>
<td>18/21 (85.7)</td>
</tr>
</tbody>
</table>

Note—Data are the number of lesions detected/total number studied (%) by each imaging technique.
MRI vs Endoscopic Ultrasound in Pancreatic Cysts

Fig. 3—68-year-old woman with intraductal papillary mucinous neoplasms of branch duct type in pancreas head.
A, Axial T2-weighted MRI shows that multilocular cystic lesion has communication with main pancreatic duct (arrow) in pancreas head.
B, Endoscopic ultrasound shows no communication with main pancreatic duct in round and heterogeneous hypoechoic lesion.
C, ERCP shows communication with main pancreatic duct (arrow).

TABLE 3: Differentiation of Benign Cystic Pancreatic Lesions From Malignant Cystic Pancreatic Lesions on MRI and Endoscopic Ultrasound (EUS)

<table>
<thead>
<tr>
<th>Technique and Reviewer</th>
<th>Area Under ROC Curve Value (95% CI)</th>
<th>Sensitivity (%)</th>
<th>Accuracy (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRI reviewer 1</td>
<td>0.755 (0.521–0.913)</td>
<td>87.5</td>
<td>76.2</td>
</tr>
<tr>
<td>MRI reviewer 2</td>
<td>0.774 (0.541–0.924)</td>
<td>75.0</td>
<td>71.4</td>
</tr>
<tr>
<td>EUS reviewer 1</td>
<td>0.769 (0.536–0.921)</td>
<td>87.5</td>
<td>71.4</td>
</tr>
</tbody>
</table>

Note—ROC = receiver operating characteristic.

Recently, EUS has been frequently used to visualize pancreatic lesions, because the high resolution that it offers results in high sensitivity for detecting pancreatic neoplasms [25]. EUS has shown improved accuracy in distinguishing between benign and malignant cystic neoplasms through detection of septa, mural nodules, MPD dilatation, and communication with MPD [26]. Gastroenterologists prefer EUS because biopsy or aspiration can be performed during the same examination to increase diagnostic accuracy [27]. However, there are disadvantages to EUS, in that EUS-guided biopsy or fine needle aspiration is an invasive technique and yields lower accuracy for cystic pancreatic lesions than for solid lesions [1].

Our results suggest an equivalent diagnostic accuracy between MRI (area under ROC curve values, 0.755 and 0.774) and EUS (area under ROC curve value, 0.769) for predicting malignancy of cystic lesions in the pancreas. Although MDCT is useful for detecting cystic pancreatic neoplasm, CT has limitations for characterizing lesions [28–30]. MRI or EUS is therefore recommended as a secondary imaging tool for detailed characterization of the presence of mural nodules, multiple septa, and MPD dilatation, which are important factors in predicting the potential for malignancy. Considering the similar diagnostic accuracies of MRI and EUS, MRI may be preferred because of its noninvasiveness and its ability to provide essential information for the establishment of treatment plans.

Furthermore, in our study, we found that interobserver agreement for predicting malignancy and characterizing internal structures ranged from moderate to almost perfect (κ = 0.618–1.000) but that, for the characterization of mural nodules in particular, it was a bit lower (κ = 0.422). Several previous studies have reported that EUS is an operator-dependent technique and has low interobserver agreement [31–33]. Even an experienced gastroenterologist can miss pancreatic neoplasms because EUS provides a limited field of view [14]. Unfortunately, we were unable to evaluate the interobserver agreement of EUS because of the retrospective nature of this study and the fact that the EUS video clips were unavailable.

There were some limitations to this study. First, our study was retrospective and included a small sample size because there were relatively few patients who had undergone both EUS and MRCP before surgery and biopsy. Second, our study could have selection bias. It was possible to include only a limited number of patients with cystic pancreatic lesions larger than 2 cm because we relied solely on histopathologic confirmation to determine the diagnostic performance. Therefore, the study population was not able to reflect the entire spectrum of pancreatic cystic tumors. Nevertheless, to correctly establish a

reviewers 1 and 2, respectively; 85.7% for the gastroenterologist), and communication of cystic lesions with MPD (90.5% for both MRI reviewers; 85.7% for the gastroenterologist). It is important to evaluate the presence of septa, mural nodule, and MPD dilatation, which are important factors in differentiating mucinous cystic neoplasms, solid pseudopapillary tumor, and intraductal papillary mucinous neoplasms from benign cystic lesions, such as pseudocysts, retention cysts, and dermoid cysts [14, 15]. The presence of communication with the MPD is also important, especially when distinguishing intraductal papillary mucinous neoplasms from other cystic lesions [16]. Surgical resection is required in cystic lesions with the presence of internal septa, mural nodule, and MPD dilatation because of their high malignancy potential [17–20]. The results from our study support other previous reports on the good diagnostic performance of MRI with MRCP in predicting the presence of septa (sensitivity, 62–82%), mural node (sensitivity, 75–89%), MPD dilatation (sensitivity, 88–93%), and the communication with MPD (sensitivity, 70–93%) by providing a detailed set of images of the MPD and associated cystic lesions [21–24].
standard reference of the internal structures, it is desirable to select a homogeneous group confirmed by surgery. Finally, we could not obtain interobserver agreement of EUS because a single gastroenterologist reviewed photographed EUS images instead of original EUS video clips, which may have limited the accuracy of evaluation of cystic pancreatic lesions. Ahmad et al. [33] previously reported that the review of photographed EUS images was comparable to that of the actual realtime examination for the characterization of cystic pancreatic lesions. In our study, one experienced gastroenterologist with 12 years of experience in gastroenterology performed all EUS examinations. The gastroenterologist, who was blinded to the pathologic results, analyzed the lesions using the EUS interpretation report and images saved on PACS.

In conclusion, MRI and EUS are comparable for characterizing morphologic features and predicting malignancy of cystic pancreatic lesions. Considering the noninvasiveness of MRI, MRI might be a preferred imaging tool for diagnosis of cystic pancreatic lesions, whereas EUS could be reserved for cases that require aspiration or biopsy.

References