

Peer Review File

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Reviewer A

Interesting study, but the authors should specifically illustrate the type of tumor in terms of anatomic site such as intra- or extra-hepatic locations as well as in terms of tumor morphology i.e., nodular, mass-like, intra-ductal, infiltrative etc.

Response: Thanks very much for your suggestion. We have added them in the legend of Figure 1.

Furthermore, the authors should specify the surgical pathological diagnosis used as benchmark for each patient.

Response: Thanks very much for your suggestion. We have mentioned it in the manuscript “The surgical pathological diagnosis used as benchmark for each patient.”

Moreover, it is not clear how many patients were included in the study: a total of 186 had a high clinical suspicion of cholangiocarcinoma (CholK), but it is not clearly reported how many patients were enrolled being eligible for the study.

Response: Thanks very much for your suggestion. We have mentioned that “these 186 patients were examined by MSCT and MRCP. The MSCT examination was performed using the PHILIPS Ingenuity CT64 slice spiral computed tomography (CT).”, indicating all of them were enrolled being eligible for the study.

Finally, previous comparative studies between CT and MRI in patients with CholK should be included in the Introduction and Discussion sections; for this purpose, see the following papers:

1. D'Antuono F, De Luca S, Mainenti PP, Mollica C, Camera L, Galizia G, Brunetti A, Maurea S. Comparison Between Multidetector CT and High-Field 3T MR Imaging in Diagnostic and Tumour Extension Evaluation of Patients with Cholangiocarcinoma. *J Gastrointest Cancer*. 2020 Jun;51(2):534-544. doi: 10.1007/s12029-019-00276-z. PMID: 31353420.

2. Maurea S, Caleo O, Mollica C, Imbriaco M, Mainenti PP, Palumbo C, Mancini M, Camera L, Salvatore M. Comparative diagnostic evaluation with MR cholangiopancreatography, ultrasonography and CT in patients with pancreatobiliary disease. *Radiol Med*. 2009 Apr;114(3):390-402. English, Italian. doi: 10.1007/s11547-009-0374-x. Epub 2009 Mar 5. PMID: 19266258.

Response: Thanks very much for your suggestion. We have added that “Maurea et al. (6) confirmed the diagnostic potential of MRCP in the study of the pancreatic-bile duct system. In particular, MRCP has been compared with ultrasound and multi-slice spiral computed tomography (MSCT) (6). In the study of D'Antuono et al. (7) they found that magnetic resonance imaging (MRI) with MRCP represents a valid alternative to multidetector computed tomography (MDCT) for the diagnostic evaluation of patients with cholangiocarcinoma to establish tumor respectability providing multiplanar scanning of high-contrast imaging quality;

MDCT should be preferred in uncooperative patients, in the presence of biliary stents or when MRI is absolutely contraindicated for incompatible medical devices.” in the introduction and “In the study of D’Antuono et al. (7), they also confirmed that MRI with MRCP imaging represents a valuable alternative to MDCT in the diagnostic assessment of patients with CCA as it provides accurate identification and characterization of tumor lesions as well as appropriate judgement of tumor respectability.” in the Discussion section.

Reviewer B

1. I suggest changing the word diacrisis to diagnosis in line 69, it is easier to understand.

Response: Thanks very much for your suggestion. We have re-modified in the manuscript.

2. I consider it important to mention the criteria for high suspicion of cholangiocarcinoma in the patients.

Response: Thanks very much for your suggestion. We have added that “Selection of research objects: A total of 186 patients with jaundice as the first symptom (106 males and 80 females), who were highly suspected to have cholangiocarcinoma through computed tomography (CT) examination and who had been admitted to The Second Affiliated Hospital of Soochow University from March 2020 to May 2022 were included in this study.”.

3. In the discussion it is important to compare your results with similar studies, is the sensitivity and specificity similar higher or lower compared to others? Why do you think it is different?

Response: Thanks very much for your suggestion. We have added that “According to the previous study, Varghese et al. [25] reported high levels of sensitivity (91%), specificity (98%) and diagnostic accuracy (97%) for MRCP. Our results for sensitivity and diagnostic accuracy are slightly higher than those of previous study.”

4. It is not clear how he confirmed or not the diagnosis in the patient who did not see the lesion on imaging studies. Did you perform surgery on all subjects? What was the indication for the surgery?

Response: Thanks very much for your suggestion. We have not performed surgery on all subjects. But we have mentioned that “these 186 patients were examined by MSCT and MRCP. The MSCT examination was performed using the PHILIPS Ingenuity CT64 slice spiral computed tomography (CT).”, indicating all of them were enrolled being eligible for the study.

Reviewer C

First, the title needs to indicate the comparisons of the diagnostic accuracy between MSCT and MRCP.

Response: Thanks very much for this suggestion. We changed the title to “Investigation of the accuracy of magnetic resonance cholangiography and multi-slice spiral computed tomography in the diagnosis of cholangiocarcinoma”.

Second, the abstract is not adequate and needs further revisions. The background did not have comments on the limitations of MSCT and the strengths of MRCP, as well as the knowledge gaps on the relative accuracy of MSCT vs. MRCP. The methods did not describe the inclusion of subjects, the gold diagnosis of cholangiocarcinoma, and statistical methods for comparing the diagnostic accuracy parameters of the two. The results need to first briefly describe the clinical characteristics of the study sample and please report the accurate P values. The conclusion needs some more detailed comments for the clinical implications of the findings.

Response: Thanks very much for this suggestion. We changed the abstract to “**Background:** Cholangiocarcinoma is a common malignant biliary tract tumor in clinical practice. The detection rate of multi-slice spiral computed tomography (MSCT) with a diameter of 10mm is low, and it is easy to be misdiagnosed and missed. In addition, patients who are allergic to iodized contrast media are not eligible for MSCT screening. However, magnetic resonance cholangiopancreatography (MRCP) is non-invasive, does not require contrast injection, scans quickly, and is simple to perform. MRCP has good development rate and the ability to recognize human pancreas and biliary tract. MRCP is also non-invasive, does not require contrast injection, has fast scanning speed, and is easy to operate. In addition, MRCP has a good development rate and the ability to recognize human pancreas and biliary tract. Therefore, this study sought to analyze the accuracy of MRCP and MSCT in the diagnosis of cholangiocarcinoma.

Methods: In this paper, 186 patients with highly suspected cholangiocarcinoma admitted to Second Affiliated Hospital of Soochow University from March 2020 to May 2022 were selected for MSCT and MRCP examination. We compared the diagnostic accuracy, sensitivity and specificity of MSCT and MRCP with pathological diagnosis and the detection rate of lesions with different diameters between MSCT and MRCP. Finally, the imaging features of MSCT and MRCP of cholangiocarcinoma were analyzed.

Results: The results showed that (I) the diagnostic accuracy (95.70%), sensitivity (95.12%), and specificity (96.15%) of MRCP were higher than those of MSCT (69.89%, 60.98%, and 76.92%, respectively; $P < 0.05$); (II) MSC and TMRCP were basically consistent with the datum (Kappa value =0.527, Kappa value =0.767, respectively); (III) the detection rate of lesions <0.5 cm in diameter of MRCP (32.05%) was higher than that of MSCT (14.00%; $P < 0.05$); and (IV) the detection rates of lesions 0.5–1.0 cm (38.46%) and >1.0 cm (29.49%) in diameter of MRCP were lower those of MSCT (50.00%, and 36.00%, respectively; $P > 0.05$).

Conclusions: MRCP can provide relevant imaging feature information, improve the accuracy, sensitivity and specificity of the diagnosis of bile duct carcinoma, and has a high detection rate for small diameter lesions, which has good reference, promotion and reference value.”.

Third, the introduction of the main text needs to review limitations of MSCT and the strengths of MRCP including their diagnostic accuracy for cholangiocarcinoma and what has been known on the relative accuracy of MSCT vs. MRCP, as well as its knowledge gap. Please describe the clinical significance of this research focus.

Response: Thanks very much for this suggestion. We added that “In addition, the MSCT comprises 2 scans (i.e., a plain scan and an enhanced scan), and has a large scanning range, provides a multi-phase enhanced scan, enables rapid examinations, and can be used to perform thin layer reconstruction (15,16). However, for lesions <10 mm in diameter, the detection rate of MSCT is low, and it is prone to misdiagnosis and missed diagnosis (17,18). In addition, the MSCT is not suitable for patients who are allergic to iodine contrast media. Conversely, the MRCP is non-traumatic, does not require the injection of contrast media, and has a fast-scanning speed and a simple operation method (19,20). The MRCP has a good development

rate and a good ability to identify the human pancreas and biliary tract. The natural fluid of the patient's pancreaticobiliary duct is used as a contrast agent in the examination process. Through special scanning and omnidirectional and multi-angle 3D image reconstruction, the structure, shape, scope of the obstruction site and the degree of bile duct dilation can be clearly displayed, which will not be affected by factors, such as the uneven distribution of contrast agents (21,22).”.

Fourth, the methodology of the main text needs to describe the clinical research design, sample size estimation, and the gold diagnosis of cholangiocarcinoma. In statistics, the focus should not be the consistency between MSCT and MRCP. The authors need to describe the calculation of the diagnostic parameters and statistical methods for comparing these parameters between MSCT and MRCP. Threshold values of the diagnostic parameters for a good diagnostic test should also be described. Please ensure $P < 0.05$ is two-sided.

Response: Thanks very much for this suggestion. We added that to “All patients were diagnosed using MRI examination combined with CT examination.”. We had the statistical methods for comparing these parameters between MSCT and MRCP. SPSS26.0 software was used for the data processing. For the normally distributed measurement data, a *t*-test was used, and the results are expressed as the $\bar{x} \pm s$. For the enumeration data, the χ^2 test was used, and the results are expressed as the [n/(%)]. The consistency of the MSCT, MRCP, and measurement criteria was tested by the Kappa test. A Kappa value ≥ 0.75 indicated good consistency; a $0.4 \leq$ Kappa value < 0.75 indicated normal consistency; a Kappa value < 0.4 indicated poor consistency. A P value < 0.05 indicated a statistically significant difference.

Reviewer D

1. Please check all abbreviations in the abstract and main text, such as “MRI” in the abstract and main text. All abbreviated terms should be full when they first appear.

55 performed using the PHILIPS Ingenuity CT64 slice spiral CT. The MRCP
56 examination was performed with the 1.5T superconducting MRI examination
140 qualitative diagnosis of lesions (4,5). In addition, the MSCT comprises 2 scans (i.e., a
141 plain scan and an enhanced scan), and has a large scanning range, provides a
172 March 2020 to May 2022 were included in this study. All patients were diagnosed
173 using MRI examination combined with CT examination. The patients had an average

Response: Thanks very much for your suggestion. We have added that “computed tomography (CT) and magnetic resonance imaging (MRI)” in the abstract.

2. The below TR and TE are wrong.

214 single-shot fast spin aftersound sequence. The following parameter settings were used:
215 matrix: 320×224; single layer thickness: 2.0 mm; field of vision: 380 mm; time of
216 Echo (TR) 4,000–10,000 ms; layers: 256; and Time of Repetition (TE) 400–800 ms.

Response: Thanks very much for your suggestion. We have changed them.

3. The citation of references in your text is not in order. Please check.

Response: Thanks very much for your suggestion. We have re-modified them.

4. The below two paragraphs are the same one. It's not allowed. The green part is in the Introduction section and the yellow part is in the Discussion section.

140 qualitative diagnosis of lesions (4,5). In addition, the MSCT comprises 2 scans (i.e., a
141 plain scan and an enhanced scan), and has a large scanning range, provides a
142 multi-phase enhanced scan, enables rapid examinations, and can be used to perform
143 thin layer reconstruction (15,16). However, for lesions <10 mm in diameter, the
144 detection rate of MSCT is low, and it is prone to misdiagnosis and missed diagnosis
145 (17,18). In addition, the MSCT is not suitable for patients who are allergic to iodine
146 contrast media. Conversely, the MRCP is non-traumatic, does not require the injection
147 of contrast media, and has a fast-scanning speed and a simple operation method
148 (19,20). The MRCP has a good development rate and a good ability to identify the
149 human pancreas and biliary tract. The natural fluid of the patient's pancreaticobiliary
150 duct is used as a contrast agent in the examination process. Through special scanning
151 and omnidirectional and multi-angle 3D image reconstruction, the structure, shape,
152 scope of the obstruction site and the degree of bile duct dilation can be clearly
153 displayed, which will not be affected by factors, such as the uneven distribution of
154 contrast agents (21,22). To explore the accuracy of MRCP and MSCT in the diagnosis

294 and 76.92%, respectively; $P < 0.05$). The MSCT comprises 2 scans (i.e., a plain scan
295 and an enhanced scan), and has a large scanning range, provides a multi-phase
296 enhanced scan, enables rapid examinations, and can be used to perform thin layer
297 reconstruction (15,16). However, for lesions <10 mm in diameter, the detection rate of
298 MSCT is low, and it is prone to misdiagnosis and missed diagnosis (17,18). In
299 addition, the MSCT is not suitable for patients who are allergic to iodine contrast
300 media. Conversely, the MRCP is non-traumatic, does not require the injection of
301 contrast media, and has a fast-scanning speed and a simple operation method (19,20).
302 The MRCP has a good development rate and a good ability to identify the human

305 pancreas and biliary tract. The natural fluid of the patient's pancreaticobiliary duct is
306 used as a contrast agent in the examination process. Through special scanning and
307 omnidirectional and multi-angle 3D image reconstruction, the structure, shape, scope
308 of the obstruction site and the degree of bile duct dilation can be clearly displayed,
309 which will not be affected by factors, such as the uneven distribution of contrast
310 agents (21,22). Zhang et al. (23) found that the sensitivity and specificity of MRCP in

Response: Thanks very much for your suggestion. We have changed in the Discussion section, which is “In the study of D’Antuono et al. (7), they also confirmed that MRI with MRCP imaging represents a valuable alternative to MDCT in the diagnostic assessment of patients with cholangiocarcinoma as it provides accurate identification and characterization of tumor lesions as well as appropriate judgement of tumor respectability.” and have added that “Maurea

et al. (6) confirmed the diagnostic potential of MRCP in the study of the pancreatic-bile duct system. In particular, MRCP has been compared with ultrasound and multi-slice spiral computed tomography (MSCT) (6). In the study of D'Antuono et al. (7) they found that magnetic resonance imaging (MRI) with MRCP represents a valid alternative to multidetector computed tomography (MDCT) for the diagnostic evaluation of patients with cholangiocarcinoma to establish tumour resectability providing multiplanar scanning of high-contrast imaging quality; MDCT should be preferred in uncooperative patients, in the presence of biliary stents or when MRI is absolutely contraindicated for incompatible medical devices. In addition, the MSCT comprises 2 scans (i.e., a plain scan and an enhanced scan), and has a large scanning range, provides a multi-phase enhanced scan, enables rapid examinations, and can be used to perform thin layer reconstruction (8,9). However, for lesions <10 mm in diameter, the detection rate of MSCT is low, and it is prone to misdiagnosis and missed diagnosis (10,11). In addition, the MSCT is not suitable for patients who are allergic to iodine contrast media. Conversely, the MRCP is non-traumatic, does not require the injection of contrast media, and has a fast-scanning speed and a simple operation method (12,13). The MRCP has a good development rate and a good ability to identify the human pancreas and biliary tract. The natural fluid of the patient's pancreaticobiliary duct is used as a contrast agent in the examination process. Through special scanning and omnidirectional and multi-angle 3D image reconstruction, the structure, shape, scope of the obstruction site and the degree of bile duct dilation can be clearly displayed, which will not be affected by factors, such as the uneven distribution of contrast agents (14,15).” in the introduction section.