



Application value of ultrasound elastography in the diagnosis of pediatric surgical biliary atresia

Yanqiang Li^{1#}, Jinghua Jiang^{2#}, Hong Wang¹

¹Department of Pediatric Surgery, The First Affiliated Hospital of Guangxi Medical University, Nanning, China; ²Department of Ultrasound Medicine, The Third Affiliated Hospital of Guangxi Medical University, Nanning, China

#These authors contributed equally to this work.

Correspondence to: Hong Wang. Department of Pediatric Surgery, The First Affiliated Hospital of Guangxi Medical University, No. 6, Shuangyong Road, Nanning, China. Email: whlyq0801@163.com.

Response to: Feng Q, Li N, Ren Q, *et al.* Does ultrasound elastography have high value in diagnosis of biliary atresia in pediatric surgery? *Transl Pediatr* 2022. doi: 10.21037/tp-22-250.

Submitted Jun 27, 2022. Accepted for publication Aug 19, 2022.

doi: 10.21037/tp-2022-01

View this article at: <https://dx.doi.org/10.21037/tp-2022-01>

We thank Feng *et al.* for their comments on the systematic review and meta-analysis: *Ultrasound elastography in the diagnosis of biliary atresia in pediatric surgery: a systematic review and meta-analysis of diagnostic test* published in the latest issue of *Translational Pediatrics* (1). Based on the meta-analysis, this study analyzed the application value of ultrasound elastography in the diagnosis of biliary atresia in pediatric surgery. The results showed that ultrasound elastography had a high diagnostic value in diagnosing biliary atresia in pediatric surgery. However, there were still some shortcomings in this work. The number of relevant documents after retrieval was relatively small. After screening, only 7 literatures met the inclusion criteria. Therefore, from the perspective of the number of included documents, the small number of literatures required a large number of clinical researches or further verification with an enlarged sample size.

When the literatures were included in this study, the PICOS (2) principle of evidence-based medicine was followed. This study mainly involved four aspects of PICO as follows. P represented patient/population, that was, children with biliary atresia. I represented intervention, which was ultrasound elastography. O stood for outcomes, which meant the sensitivity and specificity of diagnosis. S indicated the study design, as this study was limited to clinical research. The search keywords were determined, and the database and manual journal retrieval were applied to search for studies related to the diagnosis of biliary atresia

in pediatric surgery by ultrasound elastography. The search strategies were formulated on the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) statement (3), and all relevant articles were not limited by language. To improve the relevance of the search, the search scope was limited to titles or abstracts. The article search was conducted through databases and manual journal retrieval for studies related to the diagnosis of biliary atresia in pediatric surgery by ultrasound elastography. But manual journal retrieval found, no literatures that met the requirements were included after exclusion. Thus, when this article was written, this part was not explained in detail. During the database retrieval process, the relevant articles were searched in PubMed, OVID, Web of Science, Spring, Scopus, Science Direct, Embase, Cochrane Library, Google Scholar, Elsevier, CNKI, China Journal Full-text Database (CJFD), Wanfang Data, and so on. The literatures searched in PubMed, Web of Science, Embase, and Cochrane Library were included in analyzing the application value of ultrasound elastography in the diagnosis of biliary atresia in pediatric surgery. The obtained literatures searched in other databases was excluded due to the type of study and abnormal biliary atresia in children, so were not included in the study. Thus, the relevant database information was not described.

In this study, the search strategy was formulated according to the PRISMA statement (3), and a meta-analysis was conducted according to the items in the PRISMA standardized guidelines. This study aimed

to explore the value of ultrasound elastography in the diagnosis of pediatric surgical biliary atresia based on a meta-analysis. The study was a retrospective meta-analysis and was not a clinical trial, so there was no need to spend a lot of time and effort registering PROSPERO. The literature indicators were assessed for quality assessment using the QUADAS (4) standard for evaluating diagnostic tests. The QUADAS standard was the only diagnostic test quality assessment criteria that has been rigorously evaluated and validated. A total of 14 items were included: (I) disease spectrum composition; (II) selection criteria; (III) gold standard; (IV) disease progression bias; (V) partial reference bias; (VI) multiple reference bias; (VII) mixed bias; (VIII) implementation of the test to be evaluated; (IX) implementation of the gold standard; (X) test interpretation bias; (XI) gold standard interpretation bias; (XII) clinical interpretation bias; (XIII) uninterpretable test results; (XIV) cases of withdrawal. Each item was rated as yes, no, or unclear. “Yes” meant meeting the criterion, “no” meant not meeting, and partially meeting or insufficient information from the literature was assessed as “unclear”. With the QUADAS scale, each included literature was evaluated one by one from bias [items (III)–(VII), (X)–(XII), and (XIV)], variation [items (I) and (II)], and quality of reports [items (VIII), (IX), and (XIII)], to find out the causes of various biases and variations. The quality assessment of the included literatures was detailed in *Fig. 2* and *Fig. 3* of the article.

In *Fig. 4*, the sensitivity and specificity of ultrasound elastography for the diagnosis of biliary atresia in pediatric surgery in the included studies were summarized, and the forest plot was drawn. The data corresponding to the diagnostic indicators were input into the Stata software, and the relevant analysis was made using the “midas” command. The sensitivity and specificity forest plots were mapped of ultrasound elastography for the diagnosis of biliary atresia in pediatric surgery. From these, the sensitivity of ultrasound elastography for diagnosing biliary atresia in pediatric surgery was 0.91, and its 95% confidence interval (CI) was 0.84–0.95. The specificity was 0.95, and its 95% CI was 0.80–1.00.

Acknowledgments

Funding: None.

Footnote

Provenance and Peer Review: This article was commissioned

by the editorial office, *Translational Pediatrics*. The article did not undergo external peer review.

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at <https://tp.amegroups.com/article/view/10.21037/tp-2022-01/coif>). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Open Access Statement: This is an Open Access article distributed in accordance with the Creative Commons Attribution-NonCommercial-NoDerivs 4.0 International License (CC BY-NC-ND 4.0), which permits the non-commercial replication and distribution of the article with the strict proviso that no changes or edits are made and the original work is properly cited (including links to both the formal publication through the relevant DOI and the license). See: <https://creativecommons.org/licenses/by-nc-nd/4.0/>.

References

1. Li Y, Jiang J, Wang H. Ultrasound elastography in the diagnosis of biliary atresia in pediatric surgery: a systematic review and meta-analysis of diagnostic test. *Transl Pediatr* 2022;11:748-56.
2. Baughman RP, Valeyre D, Korsten P, et al. ERS clinical practice guidelines on treatment of sarcoidosis. *Eur Respir J* 2021;58:2004079.
3. Liberati A, Altman DG, Tetzlaff J, et al. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate healthcare interventions: explanation and elaboration. *BMJ* 2009;339:b2700.
4. Whiting PF, Rutjes AW, Westwood ME, et al. QUADAS-2: a revised tool for the quality assessment of diagnostic accuracy studies. *Ann Intern Med* 2011;155:529-36.

Cite this article as: Li Y, Jiang J, Wang H. Application value of ultrasound elastography in the diagnosis of pediatric surgical biliary atresia. *Transl Pediatr* 2022;11(8):1433-1434. doi: 10.21037/tp-2022-01