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Iranian Journal of Radiology
Article DOI: 10.5812/iranjradiol.103658
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Peer Review Report for "Ultrasonic Evaluation of Spontaneous Portosystemic Shunts in Patients with Budd-Chiari Syndrome"

Author(s): Ji-Chen Wang, Shi-Feng Cai, Chen Su, Hui-Li Fan, Yong-Hao Gai, Guang-Chuan Wang, Li Chen

Review Timeline:

Submit Date: 12 Apr 2020
Revised Date: 25 Oct 2020
Accepted Date: 27 Oct 2020

Revision (0)

Here, you can see the **Reviewers**, **Associate Editors** and **EICs'** comments from the beginning to the end of the revision process.

REFEREE: Reviewer | **Revision** (0)

17 Apr 2020

Dear AE,
This manuscript is a descriptive study that conducted on Budd-Chiari Syndrome and totally is appropriate according to methodologically; but it needs some revisions as follows:
1. "The forty-four patients (18 male, 26 female) were at a mean age of 46.3 ± 9.4 years, ranging from 27 to 65 years. In all patients, the time from the first clinical symptom to diagnosis ranged from 1 month to 24 years. The main clinical symptoms were right upper abdominal distension, varicose veins on the abdominal wall, and edema of the lower extremities. Five patients had a history of upper gastrointestinal bleeding, and 2 patients without definite symptoms were found during the health examination in our hospital." These sentences are findings and must be transferred to the result section.
2. "One-way ANOVA was performed to evaluate the difference of portal vein diameter among multiple groups. " This purpose must be added to the objective of the study.
3. "One-way ANOVA was performed to evaluate the difference of portal vein diameter among multiple groups. " Was the assumption of normality and equality of variance of the dependent variable checked in groups? These assumptions and their evaluation methods need to be explained.
4. The results of demographics, clinical variables, and statistical tests must be presented in

the table and most important of them presented by the text.
Thanks.

Amir Reza Radmard: Associate Editor | **Revision** (0) 26 Jun 2020

Dear EIC,
This manuscript describes ultrasound findings in patients with Bud-Chiari Syndrome (BCS) by focusing on spontaneous portosystemic venous shunts which has done on 44 patients as known case of BCS. The manuscript is relatively well written with appropriate selection of cases, however some major drawbacks should be mentioned as follows:
1- There is no data that how the diagnosis had been made for BCS cases. No inclusion criteria have been mentioned in this study.
2- Nothing has been mentioned about the examiners who have done Doppler studies. What about the agreement? What about the experience of the examiners?
3- It is not clear what the exact role of DSA, MRV, CTA is in this study? Was this done for all 325 BCS cases?
4- The underlying etiology of BCS cases for all 44 patients should be noted as whether the obstruction level is in IVC, hepatic veins by thrombosis or web.
5- For the time between the clinical symptoms and diagnosis the mean±SD should be added.
6- The list of ultrasound findings is really confusing with disorganized form in the manuscript, which would be better to be included in a table to summarize the main results.
7- The number of cases who had hepatofugal flow in main portal vein is somehow more than the real practice in all 5 subtypes. None of the figures shows this hepatofugal flow in main portal vein except for figure 5 which is only presenting reverse flow in intrahepatic portal vein branch. This should be added to figures.
8- The writing of the manuscript needs to be improved.
Overall, I am willing to reconsider this manuscript following major revisions.
Thanks.

REFEREE: EIC | **Revision** (0) 27 Jun 2020

Dear Authors,
Your article needs Major Revision.
Regards

OPEN PEER REVIEW

Revision (1)

Reply to Reviewers

Ideally, the reviewing process can significantly improve the submitted manuscripts by allowing the authors to take into account the advice of reviewers. Author(s) must reply to all reviewers' comments in a separate Word file, point by point. A "**Reply to Reviewers**" document is submitted along with revised manuscript during submission of revised files, summarizing the changes that the authors made in response to the reviewers' comments. The responses to reviewers' comments specifies how the authors addressed each comment the reviewers made.

You can read the authors' responses to the reviewers' comments in the next page.

Dear Prof. Kavous Firouznia and dear reviewers,

Re: Manuscript ID: 103658 and Title: Ultrasonic evaluation of spontaneous portosystemic venous shunts in patients with Budd-Chiari Syndrome

Thank you for your letter dated 27 June 2020.

We would like to thank you for allowing us to submit a revised manuscript. We also thank the reviewers for the time and effort that they have put into reviewing the draft manuscript. Your professional and useful suggestions have enabled us to improve our paper. Based on the instructions provided in your letter, we uploaded the file of the revised manuscript in which all the changes were highlighted.

Appended to this letter is our point-by-point response to the comments raised by the reviewers. The comments are reproduced and our responses are given directly afterward. If there are any questions about our work, please feel free to contact us. We hope that the revised manuscript is accepted for presentation at Iranian Journal of Radiology.

Thanks again for your valuable comments, which are very important and instructive for our future research, and hope that we can learn more from you!

Yours sincerely,

Yong-Hao Gai

20 July 2020

[Reviewer 1]

1. "The forty-four patients (18 male, 26 female) were at a mean age of 46.3 ± 9.4 years, ranging from 27 to 65 years. In all patients, the time from the first clinical symptom to diagnosis ranged from 1 month to 24 years. The main clinical symptoms were right upper abdominal distension, varicose veins on the abdominal wall and edema of the lower extremities. Five patients had a history of upper gastrointestinal bleeding, and 2 patients without definite symptoms were found during the health examination in our hospital." These sentences are findings and must be transferred to the result section.
Reply: Thank you for your comment. We have made correction according to the Reviewer’s comments. These sentences have transferred to the result section.
2. "One-way ANOVA was performed to evaluate the difference of portal vein diameter among multiple groups. " This purpose must be added in the objective of study.
Reply: Thank you for your comment. We have made correction according to the Reviewer’s comments. This purpose has been added in the objective of study.

3. "One-way ANOVA was performed to evaluate the difference of portal vein diameter among multiple groups. " Was the assumption of normality and equality of variance of the dependent variable checked in groups? These assumptions and their evaluation methods need to be explained.

Reply: Thank you for your comment. We have made correction according to the Reviewer's comments. Normality was tested using Shapiro-Wilk test and and all passed this normal distribution test. One-way ANOVA was performed to evaluate the difference of portal vein diameter and multiple comparisons between the groups were performed using LSD-t-test.

4. The results of demographics, clinical variables and statistical tests must be presented in the table and most important of them presented by text.

Reply: Thank you for your comment. We have made correction according to the Reviewer's comments. The results of demographics, clinical variables and statistical tests have been presented in Table 1 and Table 2.

Table 1.: Characteristics of the Study Patients (n=44)*

Variables	Values
Age, y	46.3±9.4 (27-65)
Sex	
Male	18 (40.9)
Female	26 (59.1)
The obstruction level in BCS cases	
HVs	4 (9.1)
IVC	0 (0)
HVs and IVC co-existed	40 (90.9)

* Values are expressed as No. (%) or mean ± SD (Range).

Abbreviations: y, year; mo,month; SD, standard deviation; BCS, Budd-Chiari syndrome; HVs, hepatic veins; IVC, inferior vena cava

Table 2. The Portal Hemodynamic Characteristics of the 44 BCS Patients and Multiple Comparisons of the MPV Diameter among Different SPSS Types*

Items	Portal-UV shunts (n=15)	Portal-HV shunts (n=11)	Portal-AHV shunts (n=6)	Splenorenal shunts (n=8)	MPV-IVC shunts (n=4)
The direction and velocity of MPV flow					
Hepatopetal (cm/s)	14 (12.71±2.94)	9 (19.30±2.57)	6 (16.30±2.42)	0	0
Hepatofugal (cm/s)	1 (6.22)	1 (7.13)	0	8 (7.0±1.27)	3 (-)
Bidirectional (cm/s)	0	1 (-)	0	0	1 (-)
The mean diameter of MPV (cm)	1.36 ± 0.16	1.29 ± 0.15	1.23 ± 0.12	1.12 ± 0.14[ab]	1.60 ± 0.16[abcd]

Abbreviations: BCS, Budd-Chiari syndrome; MPV, Main portal vein; SPSS, Spontaneous portosystemic shunts; UV, Umbilial venous; HV, Hepatic venous; AHV, Accessory hepatic venous; IVC, Inferior vena cava; SD, Standard deviation

*Values are expressed as the mean ± SD. [a]P<0.05, compared to Portal-UV shunts; [b]P<0.05, compared to Portal-HV shunts; [c]P<0.05, compared to Portal-AHV shunts;

[d]P<0.05, compared to Splenorenal shunts

[Associate Editor 1]

1- There is no data that how the diagnosis had been made for BCS cases. No inclusion criteria have been mentioned in this study.

Reply: Thank you for your comment. We have made correction according to the Reviewer's comments. Diagnoses of BCS was confirmed via digital subtraction angiography (DSA) and ultrasonography (US). The only criterion for inclusion in this study was adequate visualization of spontaneous portosystemic shunts on ultrasonogram.

2- Nothing has been mentioned about the examiners who have done Doppler studies. What about the agreement? What about the experience of the examiners?

Reply: Thank you for your comment. We have made correction according to the Reviewer's comments. All sonograms were acquired by an expert with more than 20 years in ultrasound investigation and further evaluated by two expert sonographers with 10 and 7 years of experience with consensus agreement.

3- It is not clear what the exact role of DSA, MRV, CTA is in this study? Was this done for all 325 BCS cases?

Reply: Thank you for your comment. Because ultrasound can not accurately diagnose some shunts (such as splenorenal shunts), the role of DSA, MRV or CTA is to illustrate the existence of portosystemic shunts which was first detected by ultrasound. Among the 44 cases with SPSS, some cases were diagnosed by DSA alone, some cases by CTA alone, some cases by MRV alone, and some cases were diagnosed by combination of the above methods. All 325 BCS cases was confirmed via digital subtraction angiography (DSA) and ultrasonography (US).

4- The underlying etiology of BCS cases for all 44 patients should be noted as whether the obstruction level is in IVC, hepatic veins by thrombosis or web.

Reply: Thank you for your comment. Except for the 58 lumens that were stenosed to different degrees, there were 58 lumens with complete occlusion and 3 lumens that had disappeared due to thrombosis. Among 44 patients, there were only 4 with a patent inferior vena cava (IVC), while the remaining 40 patients had mixed BCS. The obstruction level in 44 BCS patients is presented in Table 1.

5- For the time between the clinical symptoms and diagnosis the mean±SD should be added.

Reply: Thank you for your comment. The median time from the first clinical symptom to diagnosis was 36 months (the first quartile-the third quartile, 8 - 91 months).

6- The list of ultrasound findings is really confusing with disorganized form in the manuscript, which would be better to be included in a table to summarize the main results.

Reply: The main results have been included in Table 2.

Table 2. Portal Hemodynamic Changes of the patients included in the Study and Multiple Comparisons of the MPV Diameter among Different SPSS Types*

Items	Portal-UV shunts (n=15)	Portal-HV shunts (n=11)	Portal-AHV shunts (n=6)	Splenorenal shunts (n=8)	MPV-IVC shunts (n=4)
The direction and velocity of MPV flow					
Hepatopetal (cm/s)	14 (12.71±2.94)	9 (19.30±2.57)	6 (16.30±2.42)	0	0
Hepatofugal (cm/s)	1 (6.22)	1 (7.13)	0	8 (7.0±1.27)	3 (-)
Bidirectional (cm/s)	0	1 (-)	0	0	1 (-)
The mean diameter of MPV (cm)	1.36 ± 0.16	1.29 ± 0.15	1.23 ± 0.12	1.12 ± 0.14[ab]	1.60 ± 0.16[abcd]

Abbreviations: MPV, Main portal vein; SPSS, Spontaneous portosystemic shunts; UV, Umbilial venous; HV, Hepatic venous; AHV, Accessory hepatic venous; IVC, Inferior vena cava; SD, Standard deviation

*Values are expressed as the mean ± SD. [a]P<0.05, compared to Portal-UV shunts; [b]P<0.05, compared to Portal-HV shunts; [c]P<0.05, compared to Portal-AHV shunts; [d]P<0.05, compared to Splenorenal shunts

7- The number of cases who had hepatofugal flow in main portal vein is somehow more than the real practice in all 5 subtypes. None of the figures shows this hepatofugal flow in main portal vein except for figure 5 which is only presenting reverse flow in intrahepatic portal vein branch. This should be added to figures.

Reply: The Figure 5B has been added to the Figure legend section.

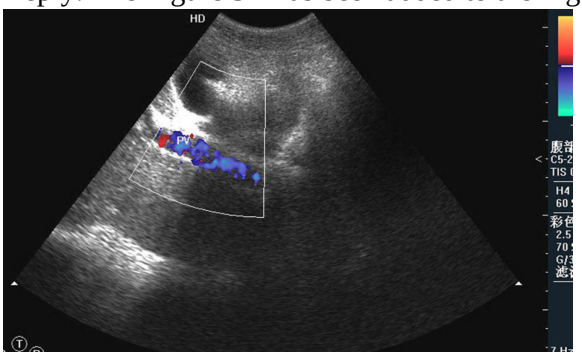
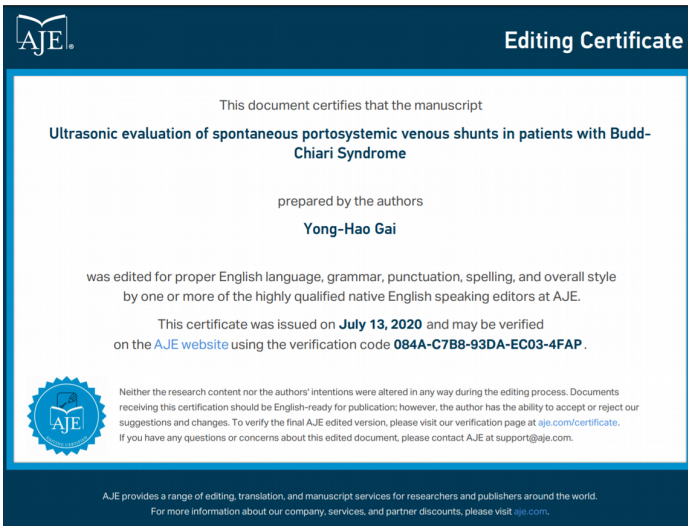


Figure 5B. In another patient, main portal vein at the porta hepatis demonstrating hepatofugal flow.

8- The writing of the manuscript needs to be improved.

Reply: Thank you for your comment. We use AJE editing services to polished the manuscript.The editing certificate is attached below.



AJE

Editing Certificate

This document certifies that the manuscript

Ultrasonic evaluation of spontaneous portosystemic venous shunts in patients with Budd-Chiari Syndrome

prepared by the authors

Yong-Hao Gai

was edited for proper English language, grammar, punctuation, spelling, and overall style by one or more of the highly qualified native English speaking editors at AJE.

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OPEN PEER REVIEW

Revision (1)

Here, you can see the **Reviewers**, **Associate Editors** and **EICs'** comments from the beginning to the end of the revision process.

REFEREE: Reviewer | **Revision** (1) — 26 Jul 2020

Dear AE,
Currently, all proposed comments applied properly by authors; and so, this manuscript is acceptable according to methodologically.
Thanks.

Amir Reza Radmard: Associate Editor | **Revision** (1) — 8 Aug 2020

Dear EIC,
The required corrections and modifications have been done as far as possible. In my opinion, this manuscript could be accepted for publication in this form.
Thanks.

REFEREE: Associate Editor | **Revision** (1) — 16 Oct 2020

Dear EIC,
The authors should respond to all comments one by one. Then, highlight any changes they make in the manuscript.
1- In 3.2. Statistical Analysis, please add manufacturer's characteristics to SPSS
2- In the legend for Figure 2A, you have mentioned, "blood flow velocity (MD)". MD is not the correct abbreviation. Please revise and correct.
3- In Figure legend 2D, what does MRV stand for?
Thanks.

REFEREE: EIC | **Revision** (1) — 18 Oct 2020

Dear Authors,
Your article needs Minor Revision.
Regards

OPEN PEER REVIEW

Revision (2)

Reply to Reviewers

Ideally, the reviewing process can significantly improve the submitted manuscripts by allowing the authors to take into account the advice of reviewers. Author(s) must reply to all reviewers' comments in a separate Word file, point by point. A "**Reply to Reviewers**" document is submitted along with revised manuscript during submission of revised files, summarizing the changes that the authors made in response to the reviewers' comments. The responses to reviewers' comments specifies how the authors addressed each comment the reviewers made.

You can read the authors' responses to the reviewers' comments in the next page.

Dear editors and reviewers,

Re: Manuscript ID: 103658 and Title: Ultrasonic evaluation of spontaneous portosystemic venous shunts in patients with Budd-Chiari Syndrome

Thank you for your letter dated 18 October 2020.

We would like to thank you for allowing us to submit a revised manuscript. We also thank the reviewers for the time and effort that they have put into reviewing the draft manuscript. Your professional and useful suggestions have enabled us to improve our paper. Based on the instructions provided in your letter, we uploaded the file of the revised manuscript in which all the changes were highlighted.

Appended to this letter is our point-by-point response to the comments raised by the reviewers. The comments are reproduced and our responses are given directly afterward. If there are any questions about our work, please feel free to contact us. We hope that the revised manuscript is accepted for presentation at Iranian Journal of Radiology.

Thanks again for your valuable comments, which are very important and instructive for our future research, and hope that we can learn more from you!

Yours sincerely,

Yong-Hao Gai

23 October 2020

Reviewer 1:

Currently, all proposed comments applied properly by authors; and so, this manuscript is acceptable according to methodologically.

Reply: Thank you for your comment.

Associate Editor 1:

The required corrections and modifications have been done as far as possible. In my opinion, this manuscript could be accepted for publication in this form.
Reply: Thank you for your comment.

Associate Editor 2:
Dear author,
Please respond to all comments one by one. Then, highlight any changes you make in

the manuscript. Please do not make any changes in the manuscript other than responding to the comments, because they will not be considered.

1-In 3.2. Statistical Analysis, please add manufacturer's characteristics to SPSS.

Reply: Thank you for your comment. We have made correction according to the Editor's comments. The statistical values were assessed using SPSS version 23.0 (IBM, Chicago, IL, USA).

2-In the legend for Figure 2A, you have mentioned, "blood flow velocity (MD)". MD is not the correct abbreviation. Please revise and correct.

Reply: Thank you for your comment. We have made correction according to the Editor's comments. We removed the abbreviation for MD.

3-In Figure legend 2D, what does MRV stand for?

Reply: Thank you for your comment. We have made correction according to the Editor's comments. Magnetic resonance venography (MRV).

In addition to replying to the editor's comments, we found several minor grammatical and spelling errors in the article and corrected them. To ensure the accuracy of the language, we use AJE editing service to polish the manuscript again. The corrected words and sentences are highlighted. The editing certificate is attached below.



AJE

Editing Certificate

This document certifies that the manuscript

Ultrasonic evaluation of spontaneous portosystemic venous shunts in patients with Budd-Chiari Syndrome

prepared by the authors

Yong-Hao Gai

was edited for proper English language, grammar, punctuation, spelling, and overall style by one or more of the highly qualified native English speaking editors at AJE.

This certificate was issued on **October 22, 2020** and may be verified on the AJE website using the verification code **084A-C7B8-93DA-EC03-4FAP**.

Neither the research content nor the authors' intentions were altered in any way during the editing process. Documents receiving this certification should be English-ready for publication; however, the author has the ability to accept or reject our suggestions and changes. To verify the final AJE edited version, please visit our verification page at aje.com/certificate. If you have any questions or concerns about this edited document, please contact AJE at support@aje.com.

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OPEN PEER REVIEW

Revision (2)

Here, you can see the **Reviewers**, **Associate Editors** and **EICs'** comments from the beginning to the end of the revision process.

REFEREE: Associate Editor | **Revision** (2) 27 Oct 2020

Dear EIC
Based on the authors' answers to the reviewers' comments, the reviewer(s) have recommended publication.
Kind regards.

REFEREE: EIC | **Revision** (2) 27 Oct 2020

Dear Authors,
Your article is acceptable for the publication.
Regards