

1/7/2023

We appreciate the opportunity to revise and resubmit our manuscript. Following is a point-by-point response to reviewers' comments.

Reviewer 1:

The use of point-of-care ultrasound to assess fluid status is well established. Authors did not present a case of how this review of the topic adds to the current body of literature.

Thanks for your comment. There are several different goals that a literature review can aim to accomplish including theory construction, survey the state of knowledge on a given topic, problem identification, highlighting the controversies and so forth. Ours in particular is a review focusing on POCUS techniques that are useful in the evaluation and management of congestive nephropathy that includes all the above elements in various proportions. While a review article typically does not add to the existing body of literature, it can certainly provide a new perspective on the topic. In fact, there are only 2 articles in PubMed till date that include *congestive nephropathy* in the title. This is an under-recognized topic that warrants attention from the medical community, particularly intensivists and nephrologists. Therefore, I would argue that our article centered on this topic is indeed novel.

I would expect a deeper dive into each component of POCUS including technique, interpretation (normal vs. pathologic), diagnostic accuracy, prognostic significance, and pitfalls/limitations.

We have recently published a detailed review focusing on these aspects (<https://pubmed.ncbi.nlm.nih.gov/35707749/>). Therefore, it would be repetitive and beyond the scope of the current *minireview* to refurnish them. Having said that, a new table is added listing the key findings and limitations of POCUS techniques discussed. Please see Table 1. In addition, the figure legends describe normal and abnormal findings. Hope it is sufficient.

Overall, the writing needs to be more concise and organized.

Thank you. Changed the language and style of writing where appropriate.

Authors should acknowledge that while there is strong evidence to support POCUS, the main challenges limiting its use are the lack of clinical training and time required for assessment, particularly with doppler interrogations in VExUS/eVExUS.

This is a very important suggestion. We have now added a few sentences in the *knowledge gaps* section to reflect on these points. Thank you.

Please include captions and explanations for the figures.

We did include the captions after references under the heading, *figure legends*. Thank you.

Reviewer 2:

This mini review focuses on bedside point of care ultrasound (POCUS) in diagnosing and managing organ failure, including the renal system. It argues on profitability vs. limitations of POCUS.

1. The topic and content could be more novel; More comprehensive investigations were conducted before. In the case of investigating an overused topic, authors should explain the novelty of their work and how their project differs from previous papers. Kindly review the differences with the previous works. Point-of-care ultrasound in nephrology, DOI: 10.1097/MNH.0000000000000681; A Blueprint for an Integrated Point-of-Care Ultrasound Curriculum for Nephrology Trainees, DOI: 10.34067/KID.0005082021. eCollection 2021 Oct 28; Point-of-Care Ultrasound in Acute Care Nephrology, 10.1053/j.ackd.2021.06.003; An Introduction to Point-of-Care Ultrasound: Laennec to Lichtenstein, DOI: 10.1053/j.ackd.2021.07.002; Conventional physical examination extended by bedside ultrasound: a new paradigm in nephrological practice, DOI: 10.1590/2175-8239-JBN-2020-0069; Point of Care Ultrasound in Cirrhosis-Associated Acute Kidney Injury: Beyond Inferior Vena Cava, doi.org/10.34067/KID.0005522022; Nephrologist-Performed Point-of-Care Ultrasound in Acute Kidney Injury: Beyond Hydronephrosis, DOI: 10.1016/j.ekir.2022.02.017; Multi-Organ Point-Of-Care Ultrasound in Acute Kidney Injury, DOI: 10.1159/000522652, External validation of risk stratification strategy in the use of renal ultrasonography in the evaluation of acute kidney injury, DOI: 10.1002/jhm.2598; Intensive care unit physician-delivered point of care renal tract ultrasound in acute kidney injury is feasible, DOI: 10.1177/1751143718762685; Point-of-care ultrasound in pediatric nephrology, 10.1007/s00467-022-05729-5; Critical Care Ultrasound: A Review for Practicing Nephrologists, 10.1053/j.ackd.2016.01.015; POCUS for Nephrologists: Basic Principles and a General Approach, DOI: 10.34067/KID.0002482021.

There are several different goals that a literature review can aim to accomplish including theory construction, survey the state of knowledge on a given topic, problem identification, highlighting the controversies and so forth. Ours in particular is a review focusing on POCUS techniques that are useful in the evaluation and management of congestive nephropathy that includes all the above elements in various proportions. While a review article typically does not add to the existing body of literature, it can certainly provide a new perspective on the topic. In fact, there are only 2 articles in PubMed till date that include *congestive nephropathy* in the title. This is an under-recognized topic that warrants attention from the medical community, particularly intensivists and nephrologists. *On the other hand, the papers mentioned by the reviewer serve a different purpose and have a different central theme (please see below table).* Of course, not denying the fact that there will be overlaps in the content as expected with narrative review on any topic.

Paper mentioned by the reviewer	Central theme
Point-of-care ultrasound in nephrology, DOI: 10.1097/MNH.0000000000000681	Nephrology-centric POCUS review focusing on very basic sonographic applications. No complex hemodynamics/VExUS.
A Blueprint for an Integrated Point-of-Care Ultrasound Curriculum for Nephrology Trainees, DOI: 10.34067/KID.0005082021	This is my paper detailing the key aspects of POCUS curriculum development. Not about congestive nephropathy.
Point-of-Care Ultrasound in Acute Care Nephrology, 10.1053/j.ackd.2021.06.003	No mention about VExUS. Venous congestion is not the focus.
An Introduction to Point-of-Care Ultrasound: Laennec to Lichtenstein, DOI: 10.1053/j.ackd.2021.07.002	This is again my paper highlighting the rationale for using POCUS as a component

	of physical examination. Does not focus on hemodynamics.
Conventional physical examination extended by bedside ultrasound: a new paradigm in nephrological practice, DOI: 10.1590/2175-8239-JBN-2020-0069	This is a case report about cardiac amyloidosis. Not a review.
Point of Care Ultrasound in Cirrhosis-Associated Acute Kidney Injury: Beyond Inferior Vena Cava, doi.org/10.34067/KID.0005522022	This is my article (actually a perspective) on utilizing POCUS in patients with cirrhosis. Not about congestive nephropathy.
Nephrologist-Performed Point-of-Care Ultrasound in Acute Kidney Injury: Beyond Hydronephrosis, DOI: 10.1016/j.ekir.2022.02.017	This is a case report demonstrating the dynamic nature of hepatic and portal Doppler. Not a review.
Multi-Organ Point-Of-Care Ultrasound in Acute Kidney Injury, DOI: 10.1159/000522652	This is my editorial making a case for imaging beyond the kidney in AKI. Not a detailed review.
External validation of risk stratification strategy in the use of renal ultrasonography in the evaluation of acute kidney injury, DOI: 10.1002/jhm.2598	This is a study on kidney ultrasound/obstructive uropathy, not about hemodynamics.
Intensive care unit physician-delivered point of care renal tract ultrasound in acute kidney injury is feasible, DOI: 10.1177/1751143718762685	This is again a study on kidney ultrasound/obstructive uropathy, not related to hemodynamics.
Point-of-care ultrasound in pediatric nephrology, 10.1007/s00467-022-05729-5	This is related to pediatric patients and a general overview of POCUS. Not about congestion.
Critical Care Ultrasound: A Review for Practicing Nephrologists, 10.1053/j.ackd.2016.01.015	Authored by intensivists, this article introduces nephrologists to critical care ultrasound applications. Not a review on congestion.
POCUS for Nephrologists: Basic Principles and a General Approach, DOI: 10.34067/KID.0002482021.	This is again my article about how POCUS is evolving as a component of physical examination in nephrology and curriculum development. Not about hemodynamics.

In summary, none of the above articles is focused on venous congestion/congestive nephropathy. It's also noteworthy that 'E-VExUS' mentioned in our review is a totally novel concept and has never been published before (except in my blog post).

2. Authors generally compared the POCUS vs. previous traditional methods for estimating venous congestion; however, a paragraph explicitly discussing the POCUS and renal system is needed. For example, they can expand their explanation in the introduction, clarifying the relation between renal perfusion and CVP.

Thank you. We have now clarified the mechanism of congestive nephropathy in the introduction section.

3. The manuscript was written and organized well; however, this section (last line of page eight and three first lines of page nine), "Supporters of the continued use of POCUS, on the other hand, are quick to point out that achieving a mortality benefit in an intervention that is not therapeutic is a mountain that may prove too high to climb and, in essence, unfair to expect of a diagnostic modality" needs to be paraphrased and split into two sentences for better clarification.

Thank you. We have simplified this sentence used semicolon to convey the meaning properly.

4. I recommend adding a table illustrating the benefits and limitations of each section of sonography (Lung US, Cardiac focus US, VExUS, and E-VExUS); likewise, you can show what kidney-related data can be obtained through each procedure.

We have added Table 1 per your suggestion. Essentially any finding that demonstrates hypervolemia is directly or indirectly related to the kidney (congestive nephropathy) in the context of AKI.

Sincerely,

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