

# Ultrasound News

October 2024



Original Research |  Open Access |  

## **Ultrasound imaging of the dorsalis pedis artery as an early indicator of the precursory changes for rheumatoid vasculitis A case series**

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First published: 17 December 2023 | <https://doi.org/10.1002/ajum.12373> | Citations: 1

# Ultrasound imaging of the dorsalis pedis artery as an early indicator of the precursory changes for rheumatoid vasculitis: A case series

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## Abstract

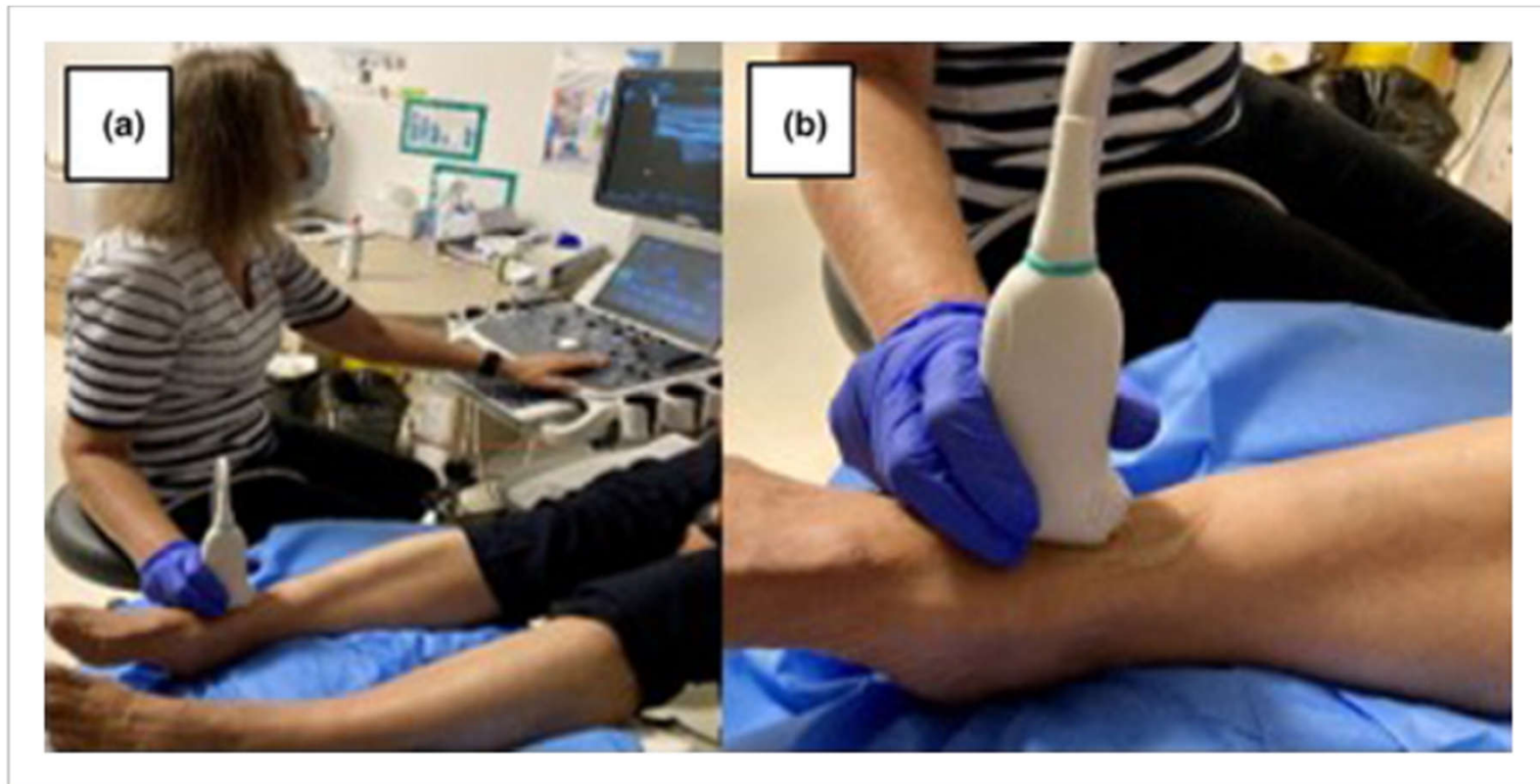
**Introduction:** Clinical verification of rheumatoid vasculitis (RV) persists as a mid-to-late diagnosis with medical imaging or biopsy. Early and subclinical presentations of RV, in particular, can remain underdiagnosed in the absence of adequate diagnostic testing. In this study, the research demonstrated the precursory changes for RV in patients with rheumatoid arthritis (RA) using non-invasive ultrasound imaging of a peripheral vessel.

**Method:** Six participants were recruited: three participants with (RA) and three age- and gender-matched healthy controls. All participants completed a Foot Health Survey Questionnaire (FHSQ), and participants with RA completed a Rheumatoid Arthritis Disease Activity Index-5 (RADAI-5). Bilateral B-mode and Doppler ultrasound of the dorsalis pedis artery (DPA) was performed. The degree of inflammation, lumen and artery diameters, lumen diameter-to-artery diameter ratio and peak systolic velocity in the proximal DPA were compared between the two groups.

**Results:** The mean RADAI-5 score (5.4 ± 0.8 out of 10) indicated moderate disease activity amongst participants with RA. Inflammation was observed in the DPA wall in all participants with RA, compared to no inflammation observed in the control group (Friedmans two way analysis:  $\chi^2 = 15.733$ ,  $P = 0.003$ ). Differences between groups for inflammation, lumen diameter and lumen diameter-to-artery diameter ratio were found ( $P < 0.034$ ), without differences for artery diameter and peak systolic velocity ( $P > 0.605$ ). DPA wall inflammation did not correlate with FHSQ scores ( $r = -0.770$ ,  $P = 0.073$ ).

**Conclusion:** Despite moderate RA disease activity, this is the first study to demonstrate the use of ultrasound to observe inflammation in small vessel disease. Our findings suggest ultrasound imaging may be a viable screening tool to demonstrate arterial wall inflammation, indicating the precursory changes of RV.

**Keywords:** adventitia, blood vessels, inflammation, intima, rheumatology.



**Figure 1**

[Open in figure viewer](#) | [↓ PowerPoint](#)

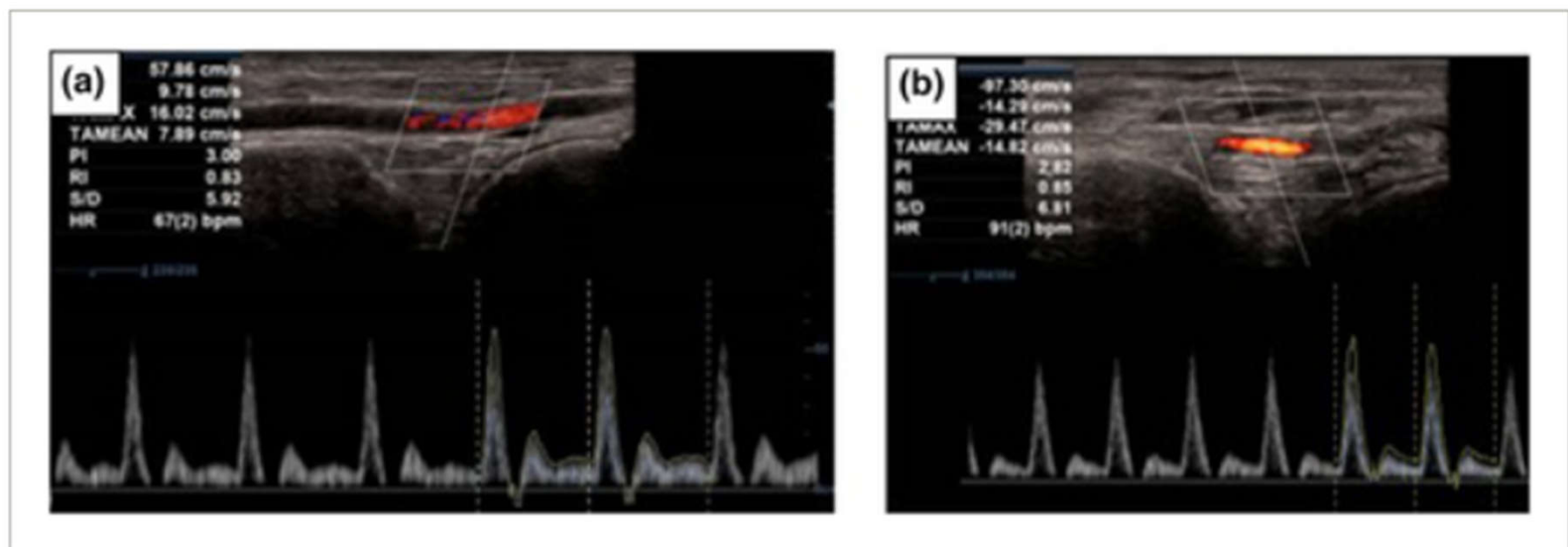
(a) Ultrasound scanning position of the proximal dorsalis pedis artery in longitudinal axis with a 13–3-MHz linear transducer; (b) transducer positioned at proximal dorsalis pedis artery longitudinally.



**Figure 3**

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Comparison of longitudinal ultrasound image of proximal dorsalis pedis artery between a participant with rheumatoid arthritis and a control participant. (a) measured lumen and artery diameters and their ratio with areas of inflammation in participant with rheumatoid arthritis (callipers); (b) measured lumen and artery diameters and their ratio of diameters, with no evidence of inflammation in a control participant (callipers); (c) measured inflammation extending from adventitia, inflammation (callipers and arrow) in participant with rheumatoid arthritis.



**Figure 4**

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(a) Spectral trace of proximal dorsalis pedis artery for control participant; (b) Spectral trace of proximal dorsalis pedis artery for participant with rheumatoid arthritis. Normal multiwave Doppler velocity was observed for both participants.

**Table 2.** Comparisons of ultrasound parameters between participants with and without rheumatoid arthritis. Data are presented as mean and standard deviation.

Ultrasound parameters	RA	Control	<i>P</i>	Cohen's
Degree of inflammation (mm)	1.67 ± 0.2	0.00 ± 0.00	<0.001 <sup>*</sup>	22.6
Lumen diameter (cm)	0.10 ± 0.02	0.17 ± 0.03	0.034 <sup>*</sup>	-2.6
Artery diameter (cm)	0.32 ± 0.05	0.32 ± 0.03	0.815	-0.2
Lumen diameter/artery diameter ratio	0.31 ± 0.05	0.51 ± 0.04	0.002 <sup>*</sup>	-5.7
Spectral Doppler velocity (cm/s)	74.00 ± 9.23	68.17 ± 21.25	0.605	0.5

RA, rheumatoid arthritis.

\* Statistically significant difference between groups.

RESEARCH ARTICLE

# Diagnostic value of point-of-care ultrasound in deep vein thrombosis in the emergency department

Mustafa Emin Canakci MD ✉, Nurdan Acar MD, Muzaffer Bilgin PhD, Caglar Kuas MD

First published: 09 July 2020 | <https://doi.org/10.1002/jcu.22892> | Citations: 11

results

The study included 266 patients. POCUS had a sensitivity of 93% (95% CI: 84-98) and specificity of 95% (95% CI: 89-96). Its positive likelihood ratio (LR<sup>+</sup>) was 14 (95% CI: 8-24), and its negative likelihood ratio (LR<sup>-</sup>) was 0.08 (95% CI: 0.03-0.19). POCUS also had a positive predictive value (PPV) of 83% (95% CI: 78-89) and a negative predictive value (NPV) of 97% (95% CI: 94-99).

conclusions

Our study verifies that POCUS has high specificity and sensitivity for the examination of the popliteal and femoral veins by an emergency physician to evaluate patients with a preliminary diagnosis of DVT.

Original Research

## Point-of-care ultrasound to diagnose acute cholecystitis in the emergency department: A scoping review

Alexander Joyce , Peter J Snelling, Tarek Elsayed, Gerben Keijzers

First published: 10 December 2023 | <https://doi.org/10.1002/ajum.12371> | Citations: 1

Of 1090 publications were identified. Forty-six met the eligibility criteria. Studies were thematically grouped into categories according to specified objectives. Point-of-care ultrasound was of acceptable but variable accuracy, contributed to by the absence of a consistent reference standard and uniform training requirements. It may positively impact ED resource utilisation through reduced ED length of stay and radioisotope imaging, whilst improving patient experience.

on

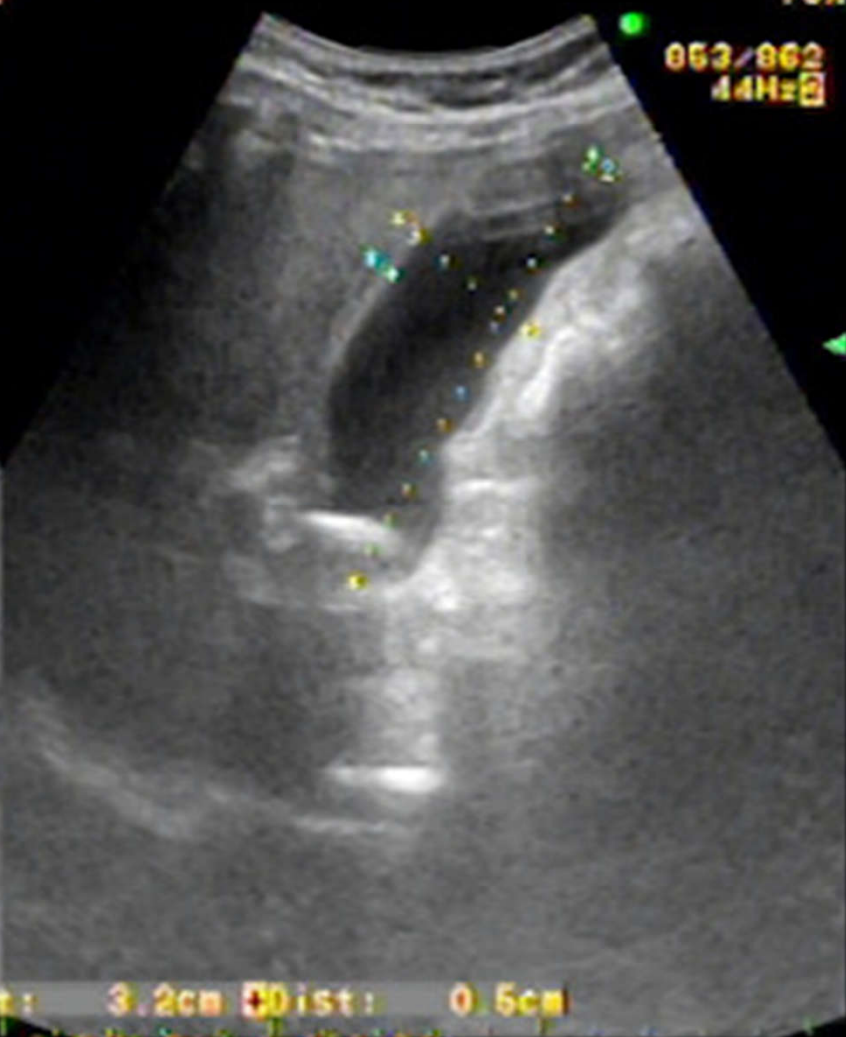
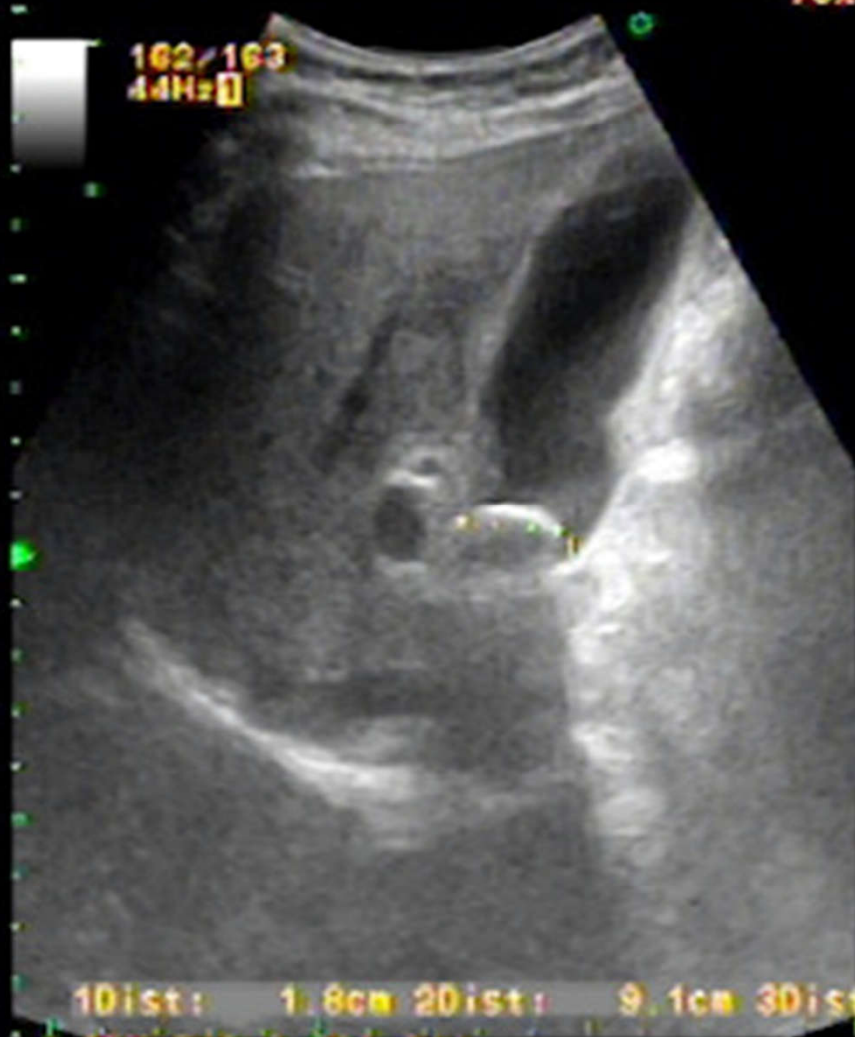
This review highlights the heterogeneity of existing research, emphasising the need for standardisation of methods and reference standards in order to precisely define the utility of POCUS for acute cholecystitis in the ED and its benefits on ED resource utilisation.

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70%

162/163  
44Hz

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44Hz



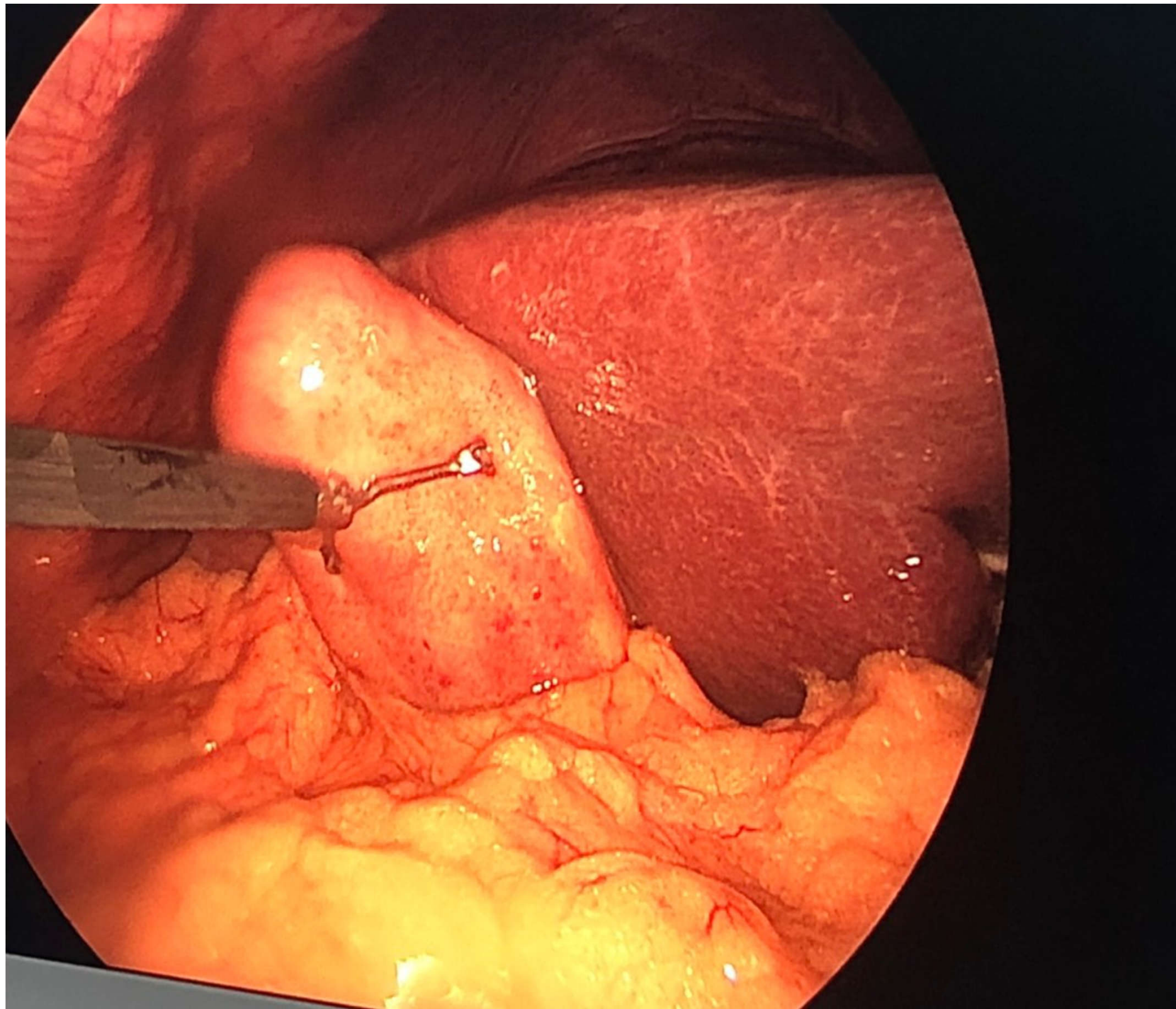
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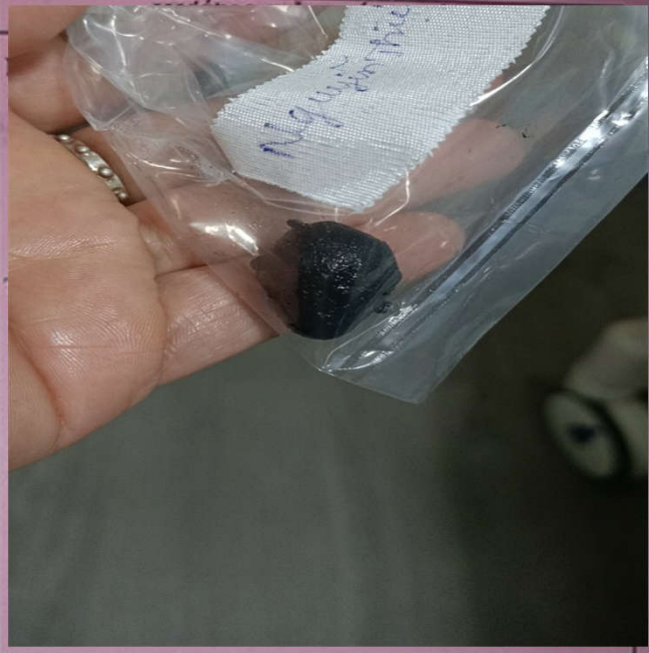
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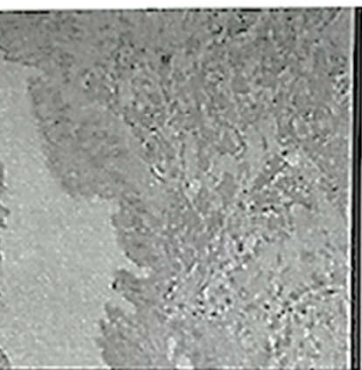
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TÚI MẬT

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MẬT HOẠI TỬ.

Ngày 08 tháng 05 năm 2023

Bác sĩ thực hiện



RESEARCH ARTICLE

# Markedly elevated hepatic arterial velocity—HAV greater than 200 cm/s—is not specific to hepatobiliary disease

Michael V. Ramirez MD, John P. McGahan MD ✉, Thomas W. Loehfelm MD, PhD, Arleen Grewal MD, Mabelle D. Wilson PhD

First published: 21 June 2020 | <https://doi.org/10.1002/jcu.22885> | Citations: 3

**Funding information:** National Institutes of Health, Grant/Award Number: UL1 TR001860



Conclusion

Elevated hepatic artery velocity greater than 200 cm/s in hospitalized patients is not specific to primary hepatobiliary disease but may indicate acute hepatic dysfunction from other causes such as infection or sepsis.

CAL NOTE · [Articles in Press](#), September 28, 2024

# Identifying Active and Passive Stiffness in Plantar Flexor Muscles Following Intermittent Maximal Isometric Contraction Using Shear Wave Elastography

[Vincent Makouf](#)<sup>a,b</sup> · [Mustapha Zidi](#)<sup>a</sup> · [Pierre Portero](#)<sup>a</sup> · ... · [Rayan Bou Serhal](#)<sup>b</sup> · [Marina Guihard](#)<sup>a</sup> ·  
[Vincent Makouf](#)<sup>a</sup>  ... [Show more](#)

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Conclusion

Intermittent fatiguing exercises modify the mechanical properties of both the contractile and elastic components. Notably, decreases in both passive and active stiffness may be critical for athletes, as these changes could potentially increase the risk of injury.



CASE REPORT

## Superior vena cava obstruction and mediastinal mass detected by point-of-care ultrasonography

Pablo Blanco MD , Fernando Esteban MD, Ivana Leonardi MD

First published: 25 April 2020 | <https://doi.org/10.1002/jcu.22847> | Citations: 2

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### Abstract

Superior vena cava syndrome (SVCS) often relates to malignant causes such as lung tumors, metastatic cancer, or lymphomas. While the diagnosis relies nowadays on the use of contrast-enhanced thoracic computed tomography, ultrasonography may have an important value as a first-line imaging technique, particularly when used in point-of-care office-based settings. Here, we report the case of a 67-year-old male presenting with SVCS in whom ultrasound contributed to diagnosis.



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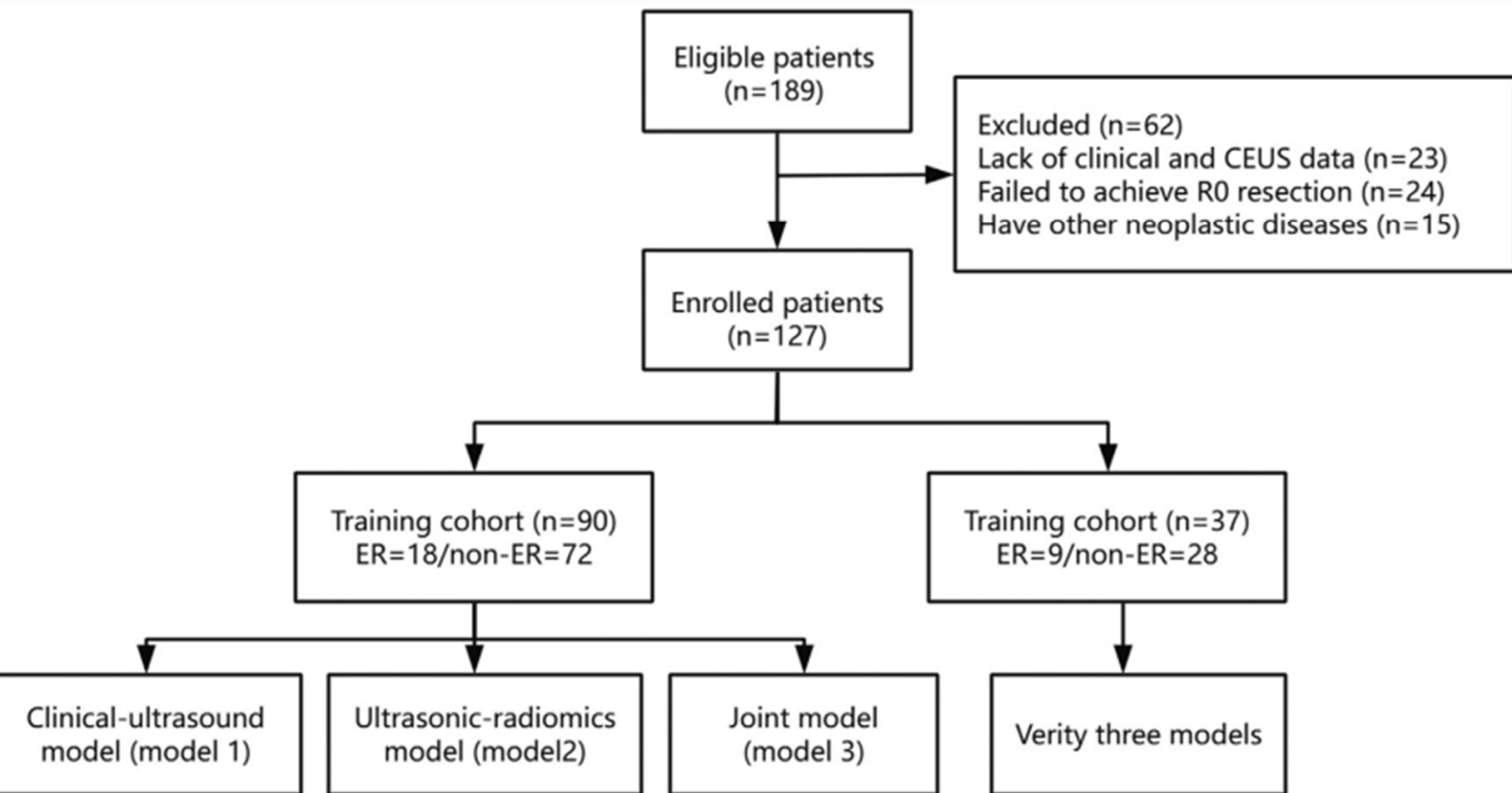
Contribution

# Sound-based Radiomics Analysis for Assessing Risk Factors Associated with Early Recurrence Following Surgical Resection of Hepatocellular Carcinoma

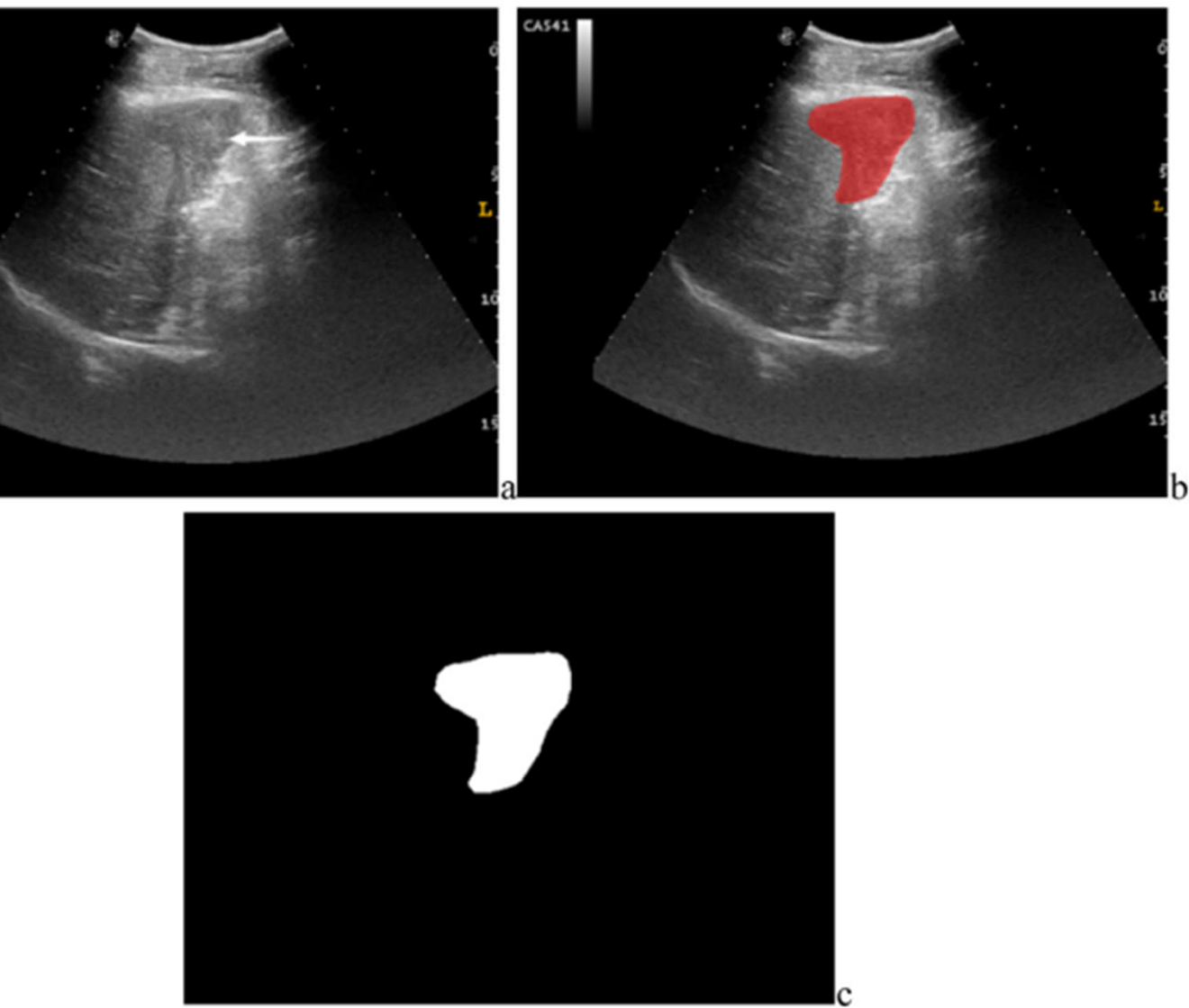
Ying Cao<sup>a</sup>, Xinyue Wang<sup>a</sup>, Chaoli Xu<sup>a</sup>, Liuxi Wu<sup>a,b</sup>, Lu Li<sup>a</sup>, Ya Yuan<sup>a</sup>, Xinhua Ye<sup>a,\*</sup>

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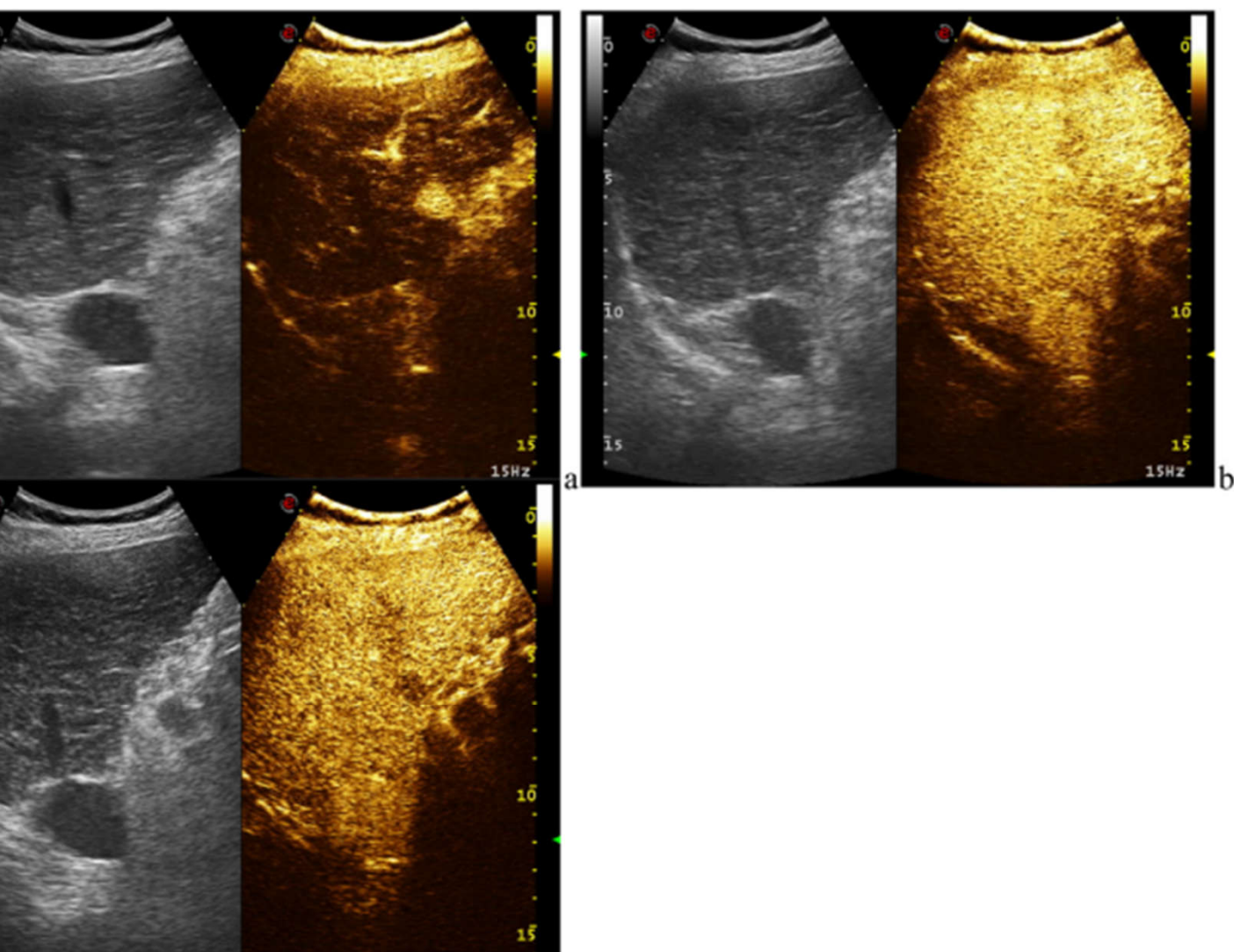
<sup>b</sup>Department of Ultrasound, Nanjing Drum Tower Hospital, Nanjing, China



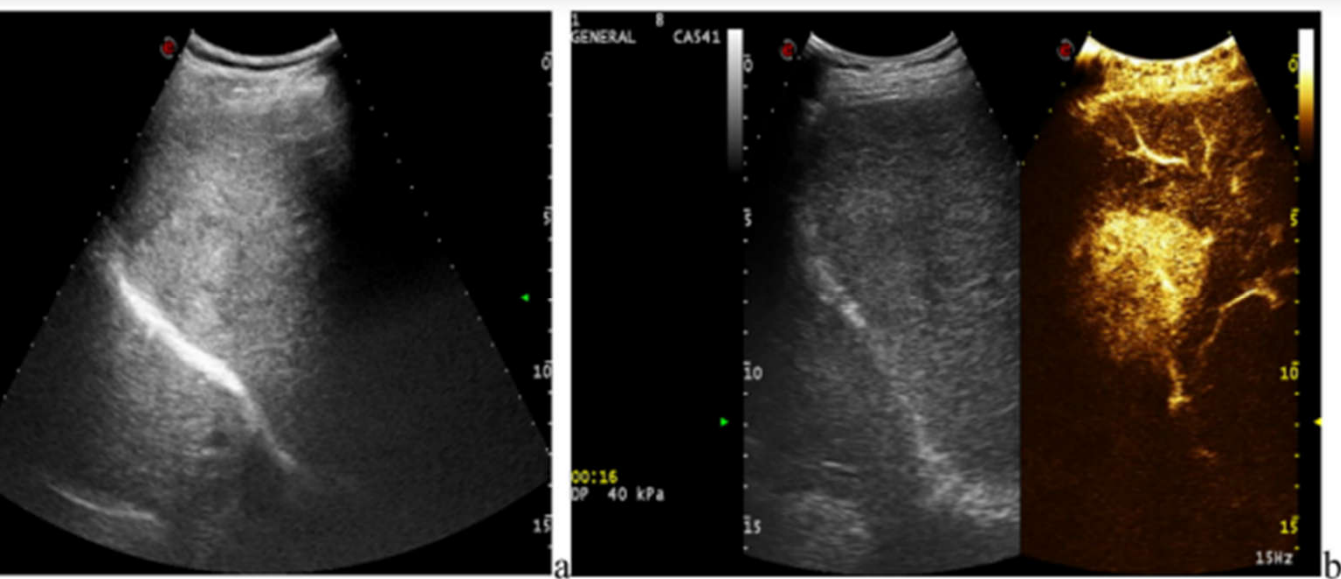
**Figure 1.** Inclusion of exclusion criteria flow charts. ER, early recurrence.



**Figure 4.** (a) Original image. (b). Region of interest segmentation. (c) Segmented image.



**Figure 2.** Preoperative contrast-enhanced ultrasound examination of a 62-year-old female patient showing a lesion in the liver segment 6, and an overall high enhancement of the arterial phase (a). In the portal phase, the contrast agent was not clear, showing equal enhancement (b). In the delayed phase, the contrast agent began to clear slightly and showed low enhancement (c).



**Figure 3.** The patient, a 56-year-old man, presented with a preoperative two-dimensional ultrasound image showing a slightly hyperechoic liver S7 segment with an irregular shape and unclear margin (a). Contrast-enhanced ultrasound examination revealed rapid enhancement in the arterial phase (b). Light contrast clearance in the portal phase (c). Low enhancement was observed in the delayed phase.

