Analysis on the characteristics of contrast-enhanced ultrasound in hepatic paragonimiasis

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Aims and objectives

To analyze the characteristics of contrast-enhanced ultrasound (CEUS) in Hepatic paragonimiasis.

Methods and materials

Patients:

From Jan 2013 to July 2014, a total of 18 consecutive patients with 20 hepatic paragonimiasis lesions examined with CEUS and confirmed by surgery and pathology were enrolled. All patients in this study were residents of China’s Sichuan Province, which is an endemic area of paragonimiasis, and a majority of them (11/18) had a history of eating crayfish.

Ultrasound examination

Conventional ultrasound and CEUS examinations were performed with a Philips IU22 scanner (Philips Medical Solutions; Mountain View, CA, United States) with a 1-5-MHz convex transducer. After conventional ultrasound scanning was completed, the CEUS study was performed. A bolus injection of 2.4 mL sulfur hexafluoride-filled microbubble contrast agent (SonoVue; Bracco SpA, Milan, Italy) was administered through a 20-gauge needle placed in the antecubital vein. The aim of CEUS was to observe the enhancement pattern in arterial phase, portal phase, and late phase. Conventional ultrasound and CEUS were performed by two experienced ultrasound physicians with more than 5 years experience of CEUS study. The CEUS enhancement pattern of 20 hepatic paragonimiasis lesions were retrospective analyzed.

Results

Different lesions exhibited different enhancement pattern on CEUS (table 1).

Among 18 patients with 20 lesions, 16 lesions (80%) exhibited hyperenhancement during the arterial phase. Of them, inhomogeneous enhancement was visualized in 7 lesions (43.75%), Fig 1#, ring enhancement with central non-enhanced areas was visualized in 6 lesions (37.50%), Fig 2#, ring enhancement with internal branching-
enhanced areas was visualized in 2#12.50%, Fig 3#, and honeycomb-like enhancement was visualized in 1 lesion #6.25%). During the portal and late phase, the 16 lesions present different enhancement patterns. 7 lesions#43.75%# appeared as isoechoic enhancement in both phases. 5#31.25%# appeared as hyperechoic enhancement in portal phase and hypoechoic enhancement in late phase. 4 lesions#25.0%# presented as hypoechoic in portal phase. For the other 4 lesions, 3 #15%# had absent contrast enhancement in three phases and 1#5%# present as isoechoic enhancement in three phases.

By the aid of CEUS, 10 nondiagnostic patients were diagnosed correctly, and 4 patients were misdiagnosed as malignant tumor.

Images for this section:

**Fig. 1:** Fig. 1: A 36-year-old woman with hepatic paragonimiasis. A: Hypoechoic lesion measuring 1.7×1.5cm was seen in the right anterior segment of the liver; B: Contrast-enhanced ultrasound showed inhomogeneous enhancement in arterial phase; C and D: In portal phase (C) the lesion appeared as hyperechoic enhancement and hypoechoic enhancement in late phase(D).

**Fig. 2:** Fig. 2: A 46-year-old woman with hepatic paragonimiasis. A: Hypoechoic lesion measuring 3.1 × 2.6 cm was seen in the left inner segment of the liver; B: Contrast-
enhanced ultrasound showed ring enhancement with central non-enhanced areas in arterial phase; C and D: In portal phase (C) and late phase (D), the enhanced area appeared as isoechoic enhancement, and the unenhanced area remained unenhanced.

**Fig. 3:** A 42-year-old man with hepatic paragonimiasis. A: Hypoechoic lesion measuring 6.6 × 5.0 cm was seen in the right anterior segment of the liver; B: Contrast-enhanced ultrasound showed ring enhancement with internal branching-enhanced areas in arterial phase; C and D: In portal phase (C) and late phase (D), contrast agent wash-out was seen at the enhanced area, and the unenhanced area remained unenhanced.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Enhancement pattern of 20 Hepatic paragonimiasis lesions</th>
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<tbody>
<tr>
<td></td>
<td>Arterial phase</td>
</tr>
<tr>
<td>16 lesions</td>
<td>inhomogeneous enhancement</td>
</tr>
<tr>
<td>hyperechoic (80%)</td>
<td>ring enhancement with central non-enhanced areas</td>
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<tr>
<td></td>
<td>ring enhancement with internal branching-enhanced areas</td>
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<tr>
<td></td>
<td>honeycomb-like enhancement</td>
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<td>3 lesions (15%)</td>
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<td>1 lesion (5%)</td>
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**Table 1:** Table 1 Enhancement pattern of 20 Hepatic paragonimiasis lesions
Conclusion

Our study shows that the enhancement manifestations of Hepatic paragonimiasis are diverse, CEUS is helpful in the diagnosis for Hepatic paragonimiasis.

Personal information

References

