Comet-tail artefacts and abdominal pain: radiological mistake or an underestimated event?

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DESCRIPTION

The comet-tail artefact appears as a dense tapering trail of echoes just distal to a strongly reflecting structure. This reverberation type of artefact occurs when there is a marked difference in acoustic impedances between an object and its surrounding.¹ A 12-year-old boy presented with a short history of acute abdominal pain without vomiting and fever was studied with an abdominal ultrasound showing the presence of multiple small echogenic foci with comet-tail artefact (figure 1). On subsequent MRI, these lesions were hyperintense on T2-weighted and hypointense on T1-weighted images, respectively (figure 2). A cause of abdominal pain was identified in a concomitant acute adenomesenteritis. Comet-tail artefact arises from reverberation of the US beam within a small cyst or gas bubble. The multiple echoes generated register as a trail on the image.

The appearance may also be seen with von Meyenburg complexes, a benign condition found in up to 5% of the population.

Comet-tail artefact must be differentiated from the ring-down artefact. In the past, it has been thought that the ring-down artefact was a variant of comet-tail artefact because of a similar US appearance. Despite this, these two artefacts have separate mechanisms. In ring-down artefact, the transmitted ultrasound energy causes resonant vibrations within fluid trapped between a tetrahedron of air bubbles. These vibrations create a continuous sound wave. This phenomenon is displayed as a line or series of parallel bands extending posterior to a gas collection.²

Figure 1 Abdominal ultrasound showing the presence of multiple small echogenic foci with comet-tail artefact (white arrow).

Figure 2 Abdominal MRI showing how these lesions were hyperintenses on T2 (white arrow).

The comet-tail artefact is a grey-scale US finding seen when small calcific/crystalline highly reflective obstructions are found, and is believed to be a special form of reverberation artefact.³ The artefact often is helpful in situations in which grey-scale imaging does not provide adequate information for a conclusive diagnosis.

Learning points

- ▶ The presence of comet-tail artefacts could avoid unnecessary invasive (ie, liver biopsy) or non-invasive (ie, CT) approaches.
- ▶ The artefact often is helpful in situations in which grey-scale imaging does not provide adequate information for a conclusive diagnosis.

Contributors PM and FDP followed the patient during the hospital stay; EC performed the follow-up and OA was the supervisor.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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