



## Lemierre's syndrome: a possible cause of neck pain

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A 55-year-old previously healthy woman presented to the emergency department with a 2-day history of right neck pain. She also suffered from right ear pain with otorrhea in recent 1 week. On physical examination, she had swelling and erythema on the right neck with purulent discharge from the right ear and perforation of the eardrum. Laboratory data revealed elevated white blood cell count ( $20.3 \times 10^3/\mu\text{L}$ ) and C-reactive protein level (328.4 mg/L). Point-of-care ultrasound of the neck revealed intraluminal echogenic material and absence of color Doppler flow over the right internal jugular vein (Fig. 1a, b and Video 1). Computed tomography (CT) with contrast was obtained subsequently to confirm venous thrombosis in the right internal jugular vein (Fig. 1c). Lemierre's syndrome secondary to right otitis media was impressed. The culture of right ear discharge revealed mixed infection with *Staphylococcus aureus* and *Providencia stuartii*. After a course of antibiotic therapy, the patient was asymptomatic at discharge 7 days later.

Lemierre's syndrome, septic thrombophlebitis of the internal jugular vein, is caused by adjacent infection, such as tonsil, larynx, pharynx, chest and even middle ear [1]. In the post-antibiotic era, Lemierre's syndrome is a rare condition with an incidence of 3.6 cases per million people per year [2]. The overall mortality rate was around 2–5% in recent studies [1, 3]. The majority of offending micro-organisms were *Fusobacterium* species, followed by Streptococci, *Staphylococcus aureus* and other miscellaneous Gram-negative bacteria [3]. The discovery of jugular vein thrombus is crucial to make the diagnosis. Ultrasound is recommended as the initial method of diagnostic imaging, which demonstrates an echogenic material in the jugular vein with absent Doppler flow [4]. Contrast-enhanced CT is subsequently used for a definitive diagnosis. Treatment of Lemierre's syndrome depends on the severity of the disease, ranging from antibiotic therapy to surgical drainage of primary source. The role of anticoagulation remains controversial [1, 3].

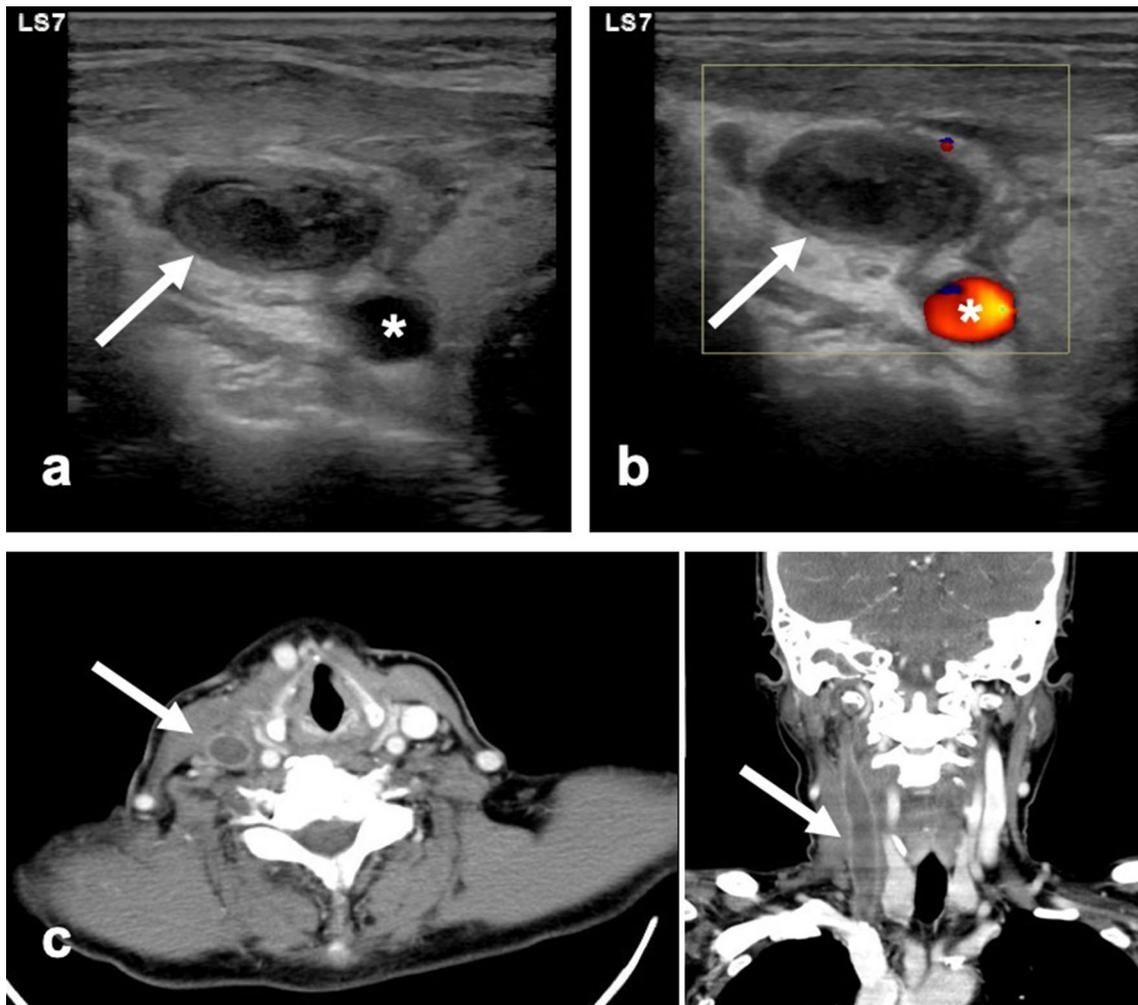
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**Fig. 1** **a** Ultrasound of the right neck with the linear probe in transverse orientation: intraluminal echogenic material (arrow) in the right internal jugular vein, lateral to the right carotid artery (asterisk). **b**

Absent color flow in Doppler mode consistent with occlusive venous thrombosis. **c** Contrast-enhanced CT of the neck: thrombosis with intraluminal filling defect in the right internal jugular vein (arrows)

## Compliance with ethical standards

**Conflict of interest** The authors declare that they have no conflict of interest.

**Statements on human and animal rights** This article does not contain any studies with human participants or animals performed by any of the authors.

**Informed consent** None.

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