Lemierre-Like Syndrome Caused by *Staphylococcus aureus* in a 3-Month-Old Girl

Luís Rodrigues[1], Flora Candeias[1], Carla Conceição[2], Maria João Brito[1]

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A 3-month-old previously healthy girl presented to the emergency room with a four-day history of fever and irritability. She was pale, crying vigorously, and had significant swelling on the right side of her neck, which was fluctuant, erythematous, and tender. Laboratory data showed hemoglobin 9.1 x 10 g/L, leucocytes 7.98 x 10^9 cells/L (51.5% neutrophils), C-reactive protein 249.3 mg/L, fibrinogen 8.4 g/L, and D-dimer 3192 µg/L. The ultrasound revealed multiple collections on the sternocleidomastoid as well as anterior and posterior cervical regions that extended to the skin, the biggest measuring 57 x 35 x 50 mm. The patient underwent the incision and drainage of the abscess and empirically started vancomycin, ceftriaxone, and clindamycin. In addition, the contrast-enhanced computed tomography scan showed the thrombosis of the distal right internal jugular vein that extended through the jugular foramen and involved the right sigmoid and transverse sinuses (Fig. 1). Several collections were identified on the right peritonsillar (14 x 7 x 17 mm), parapharyngeal and retropharyngeal regions (6 x 7 x 33 mm), molding the upper airway (Fig. 2). The pulmonary parenchyma demonstrated numerous bilateral peripheral septic emboli. These findings suggested Lemierre's syndrome. Enoxaparin was started due to the patient's age and the extent of intracranial thrombosis. Methicillin-sensitive *Staphylococcus aureus* was isolated in the abscess and in multiple repeated blood cultures (including specific anaerobic ones), thus vancomycin and ceftriaxone were stopped and flucloxacillin was initiated. She had undergone a second surgery to drain the abscesses on the eighth day and completed four weeks of flucloxacillin and nine months of anticoagulation without complications. The genetic study of thrombophilia was normal and primary immunodeficiencies were excluded. The condition initially described by Lemierre is typically characterized by a postanginal/tonsillar component, infection due to the anaerobic bacterium *Fusobacterium necrophorum*, septicemia with thrombophlebitis of the internal jugular vein, and a metastatic spread of the infection. It can occur in any age groups, but healthy infants are an uncommon target, and most patients have no link to an immunocompromised

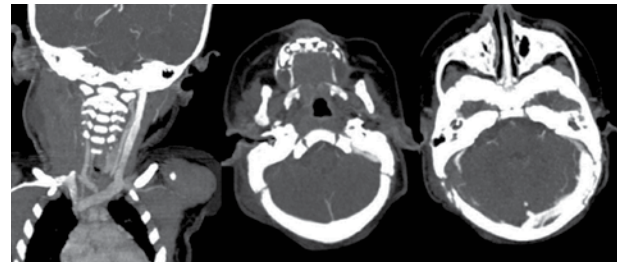

Figure 1. Contrast-enhanced computed tomography scan of the head and neck (coronal and axial maximum intensity projection reformatted images) showing no enhancement of the right internal jugular vein, sigmoid and transverse sinuses, consistent with thrombosis.

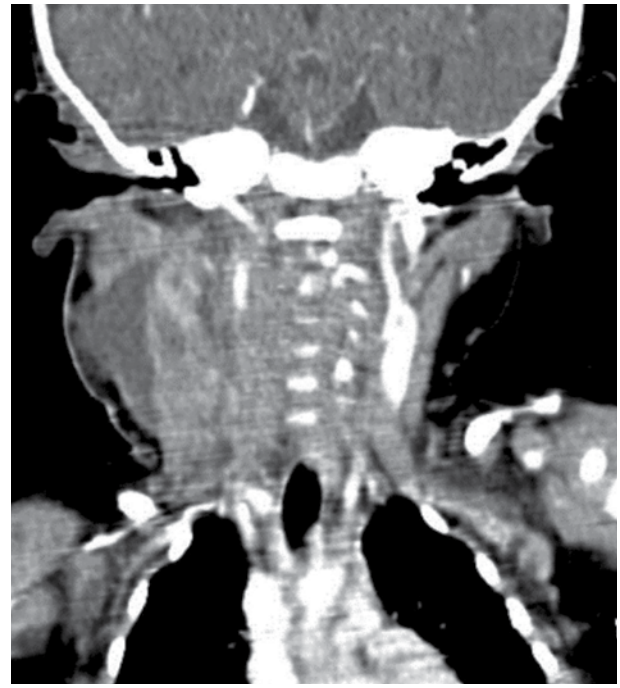

Figure 2. Contrast-enhanced computed tomography scan of the neck (coronal reformatted image) showing several collections on the right side.

1. Infectious Diseases Unit, Pediatrics Department, Hospital Dona Estefânia, Centro Hospitalar Lisboa Central, Lisboa, Portugal
2. Neuroimaging Department, Hospital Dona Estefânia, Centro Hospitalar Lisboa Central, Lisbon, Portugal
Corresponding Author
Luís Rodrigues
https://orcid.org/0000-0001-6099-4172
luisnorterodrigues@gmail.com
Infectious Diseases Unit, Pediatrics Department, Hospital Dona Estefânia, Centro Hospitalar Lisboa Central, R. Jacinta Marto, 1169-045 Lisbon, Portugal
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status. In accordance with other authors, we plead to reserve Lemierre's syndrome only for those conditions characterized by thrombophlebitis of the internal jugular vein and bacteremia caused by anaerobic organisms, mainly *Fusobacterium necrophorum*, following a recent oropharyngeal infection. There is only one case described in the literature younger than our patient and caused by *Staphylococcus aureus*. A high index of suspicion is needed to reduce the morbidity and mortality of this disease, especially at this age.[1-5]

Keywords: Infant; Jugular Veins; Lemierre's Syndrome/diagnosis; Lemierre's Syndrome/etiology; Staphylococcal Infections/complications; Venous Thrombosis

WHAT THIS REPORT ADDS

- Although *Fusobacterium necrophorum* is the most frequent associated bacteria, other pathogens may be involved and, therefore, broad-spectrum antibiotic therapy must be started until the organism and its sensitivity is determined.
- The optimal antibiotic regimen is not well defined.
- Although anticoagulation is commonly used for similar septic emboli, its role in Lemierre's syndrome is unclear. It is advisable to use the anticoagulation therapy when the thrombosis propagates retrograde and involves the cavernous sinuses of the brain.

Conflicts of Interest

The authors declare that there were no conflicts of interest in conducting this work.

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Consent for publication

Consent for publication was obtained.

Confidentiality of data

The authors declare that they have followed the protocols of their work centre on the publication of patient data.

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