Síndrome de Lemièrre y leptospirosis: Dos entidades simultáneas

Lemièrre syndrome and leptospirosis – Two simultaneous entities

Catarina Cabral[1], Inés Santos[1], Joana Vaz[2], Sara Rocha[2]

[1] Internal Medicine Department. Hospital de Egas Moniz. Lisboa (Portugal)
[2] Internal Medicine Department. Unidade Local de Saúde de Matosinhos. Matosinhos (Portugal)

ABSTRACT

Lemièrre syndrome arises after an oropharyngeal infection, with extension to the nearby structures and the carotid sheath, resulting in thrombophlebitis of the internal jugular vein. It is mainly caused by bacteria from the Fusobacterium genus, resulting in bacteriemia and systemic disease, possibly involving the kidneys, liver and blood. Leptospirosis is a zoonotic infection, transmitted through contact with infected water or soil or through direct contact with infected animals. Rats are the main reservatory. Weil's disease is the severe form of leptospirosis, causing acute kidney injury, hepatic lesion and pulmonary hemorrhage. The authors present a case where these two entities were detected, showing the difficulties associated with the diagnosis and management of associated complications.

Keywords: Upper extremity deep vein thrombosis, Lemièrre syndrome, leptospirosis, Weil disease, bacterial zoonoses.

RESUMEN

El síndrome de Lemièrre surge tras una infección orofaríngea, con extensión a las estructuras cercanas y a la vaina carotídea, dando lugar a una tromboflebitis de la vena yugular interna. Está causada principalmente por bacterias del género Fusobacterium, y provoca bacteriemia y enfermedad sistémica, que puede afectar a los riñones, el hígado y la sangre. La leptospirosis es una infección zoonótica, transmitida por contacto con agua o tierra infectadas o por contacto directo con animales infectados. Las ratas son el principal reservorio. La enfermedad de Weil es la forma grave de leptospirosis, que provoca lesión renal aguda, lesión hepática y hemorragia pulmonar. Los autores presentan un caso en el que se detectaron estas dos entidades, mostrando las dificultades asociadas al diagnóstico y el manejo de las complicaciones asociadas.

Palabras clave: Trombosis venosa profunda de las extremidades superiores, síndrome de Lemièrre, leptospirosis, enfermedad de Weil, zoonosis bacterianas.

CASE REPORT

Female, 53-year-old, no relevant medical history. Traveled to the Philippines on August, 2022, developing a febrile sensation with chills, odynophagia, a right cervical swelling and multiple swellings in the submandibular and posterior cervical regions, on August 31st, medicating herself symptomatically. Already in Portugal, she presented to the emergency room on September 11th with deteriorating symptoms, such as myalgias, migratory generalized arthralgias and progressive asthenia. Upon examination, there was a right cervical swelling, with 2 cm, with hardened consistency and tenderness; inflammation of various joints and right conjunctival suffusion (Figure 1). The blood work revealed: hemoglobin: 11.9 g/dL, leukocytes: 24,300/µL, neutrophilia: 84.7%, platelets: 154,000/µL, creatinine: 4.52 mg/dL, urea: 173 mg/dL, albumin: 3.3 g/dL, total bilirubin: 2.52 mg/dL, conjugated bilirubin: 1.32 mg/dL, ALT: 40 U/L, CK: 208 mg/dL, alkaline phosphatase: 437 U/L, gamma-glutamyl transferase: 269 U/L, sodium: 131 mmol/L, and C-reactive protein: 31.6 mg/dL; Urinalysis: leukocytes, +++ erythrocytes, and + proteins. Malaria, human immunodeficiency vírus, Hepatitis A, B and C and *Treponema pallidum* were negative.

A cervical ultrasound revealed "(...) enlargement of the right parotid gland (...) heterogeneous formation, measuring 18 mm, on the right submandibular region, likely corresponding to an abscess with a potential origin in a liquefied and superinfected lymph node (...) vessel thrombosis of the right internal jugular vein (IJV) (...)". Empirical antibiotic therapy with ceftriaxone and metronidazole was initiated, given the abscess and the Lemièrre Syndrome (LS). The patient was admitted to internal medicine department for investigation. Otolaryngology detected nasal crusts in the middle turbinates that were biopsied. The hypothesis of granulomatosis with polyangiitis was discarded through negative auto-immune essays, there was no pulmonary involvement on computed tomography (CT) and the nasal crusts biopsy were negative for granulomas.

The patient also admitted ingestion of non-drinking water and contact with places with rats. Therefore, a microbiological study was requested (Table 1), being positive for *Leptospira interrogans* through polymerase-chain reaction technique in the urine and antibodies in the serum, but these results came weeks after admission.

Streptococcus pyogenes was isolated in one blood culture. A transthoracic echocardiogram ruled out valvular endocarditis. There was an overall improvement, including hepatic and renal function, but the patient still had daily fever. She performed a neck CT showing "(...) infected lymph node conglomerate in liquefaction... strongly associated with thrombosis of the cervical segment of the right IJV (...)" (Figure 2), so she underwent cervicotomy. No microorganisms where isolated in the material collected.

The patient's condition rapidly improved, completing six weeks of antibiotic therapy and three months of anti-coagulation. At the three months follow-up there was no relapse, showing excellent progress.

Correspondencia: catarinacabral89@gmail.com
Cómo citar este artículo: Cabral C, Santos I, Vaz J, Rocha S.
Lemièrre syndrome and leptospirosis – Two simultaneous entities. Galicia Clin 2024; 85-3: 28-30.
Recibido: 06/09/2023 ; Aceptado: 06/12/2023 // https://doi.org/10.22546/75/4158

Table 1. Results of the microbiologic study made, showing positivity for DNA Leptospira in urine and positive serum antibodies

Agent	Result		
		IgM Antibodies	IgG Antibodies
Antibodies for Leptospira interrogans	POSITIVE	--	--
DNA Leptospira in urine	POSITIVE	--	--
DNA Leptospira in serum	NEGATIVE	--	--
Burkholderia pseudomallei	Negative	--	--
Chikungunya virus	--	Negative	Positive
Dengue virus	--	Negative	Positive
Zika virus	--	Negative	Positive
Epidemic parotiditis virus	--	Negative	Positive
Bartonella	--	Negative	Negative
Interferon Gamma Release Assay (IGRA)	Inconclusive	--	--

DISCUSSION

Lemièrre Syndrome is a rare complication of pharyngitis, with extension into the pharyngeal spaces, causing septic thrombophlebitis of the IJV[1]. Bacteriemia is caused primarily by *Fusobacterium necrophorum*[2]. *Streptococus pyogenes* is also found in LS[1], as was found on our patient. LS typically affects young and healthy adults[1] and mortality ranges from 5% to 18%.[1]

Upon examination, an asymmetric swelling of the neck with inflammatory signs is observed[3], and our patient presented with an abscess originating in a liquefied adenopathy, through extension, after an upper respiratory tract infection. Pain and pulmonary complaints are consistent with metastatic disease[2]. The diagnosis of LS is clinical, but patients might present with mild to severe renal and liver impairment and blood disorders.[1]

The treatment of LS is antibiotic therapy[1], which depends on the source of infection[3]. The duration of antibiotic therapy should be from two to six weeks[1,2]. In case of abscess formation, loculated empyema or metastasis, surgery might be considered[1,3], which was performed in our patient due to maintenance of symptoms. This was also the main reason to introduce anticoagulation, which is controversial[1-2], but it is recommended with thrombus extension or failure of improvement in 72 hours.[1]

Leptospirosis is a zoonotic bacterial infection[4]. Farmers, contact with livestock, rodents and areas of poor sanitation grant higher risk[4]. *Leptospira interrogans* is one of the serotypes causing leptospirosis[5]. Transmission is via direct contact with asymptomatic animals (who shed Leptospira in their urine) or through contact with contaminated water or soil[6]. Rats are the most common cause of infection[6]. The patient described consuming non-drinking water and contact with places with rats in the Philippines, where leptospirosis is endemic.

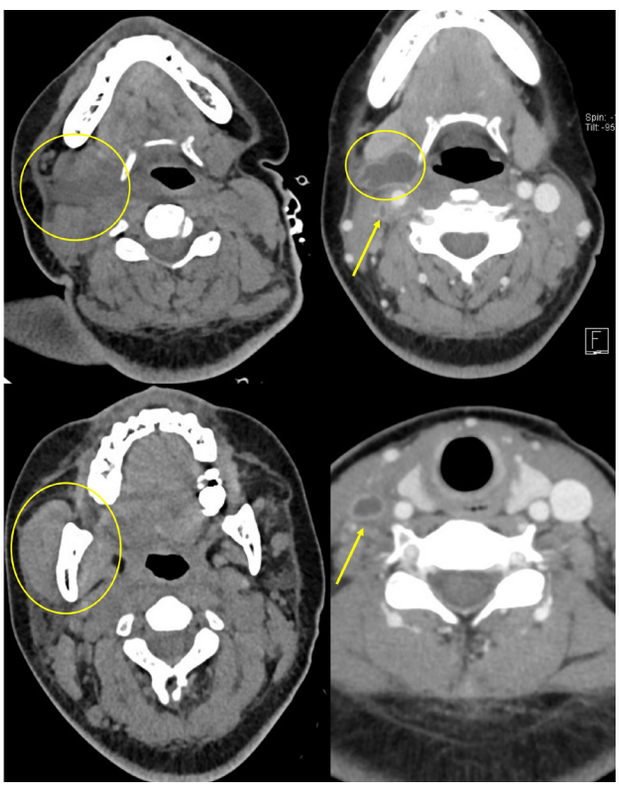
Leptospirosis' clinical course is divided into a "leptospiraemic phase" (presenting as a non-specific acute febrile illness), followed by an "immune phase"' (serum IgM antibodies and excretion of microorganisms in urine)[4]. In humans, it can range from a mild, self-limiting acute febrile illness to a severe, life-threatening condition with multiple organ dysfunction in approximately 10% of cases[4]. Conjunctival suffusion, jaundice, and acute kidney injury constitute Weil's syndrome[4]. Pulmonary haemorrhage is an important cause of mortality[4]. Diagnosis is through direct demonstration of leptospires or its DNA, or cultures, as well as indirect detection of antibodies[4]. The diagnosis was made on the "immune phase", with leptospires detected in urine. One could attribute the systemic manifestations of the patient to LS mimicking leptospirosis, but we cannot ignore the lab results, signs and epidemiology of the patient, resulting in a probable overlap of both diseases.

Figure 1. Edema of the wrists, proximal interphalangeal joints and anckles; Conjuctival suffusion (yellow arrow).

Penicillin is used for severe disease and tetracyclins and doxycycline for milder disease. On the basis that severe leptospirosis might be immune-mediated, corticosteroids could be considered, but that remains controversial.[7]

The authors present a case in which two overlapping entities are observed, making it difficult to attribute the systemic changes to just one of the pathologies. It illustrates the difficulty in diagnosing leptospirosis, demonstrating the importance of an appropriate anamnesis and clinical evaluation. It was a complex case, involving a multidisciplinary team discussion, but with complete resolution of the patient's symptoms.

Figure 2. Results to the neck CT, showing the lymph node conglomerate in liquefaction (yellow circles) and the internal jugular vein thrombosis (yellow arrow).



CONFLICT OF INTEREST
The authors declare that they have no conflict of interests.

SOURCE OF FUNDING
This research had no funding sources.

ETHICAL ASPECTS
All participants submitted a consent form to be included in this study.

REFERENCES

1. Allen BW, Anjum F, Bentley TP: Lemierre Syndrome. [Updated 2023 Jul 31]. In. StatPearls [Internet] ,Treasure Island (FL): StatPearls Publishing; 2023.
2. Eilbert, W., Singla, N. Lemierre's syndrome. Int J Emerg Med. 2013; 6, 40.
3. Andrew P. Wong, Maurice L. Duggins, Tara Neil. Internal Jugular Vein Septic Thrombophlebitis (Lemierre Syndrome) as a Complication of Pharyngitis; The Journal of the American Board of Family Medicine. 2015; 28 (3) 425-430.
4. Rajapakse S. Leptospirosis: clinical aspects. Clin Med (Lond). 2022;22(1):14-17.
5. A.E. Forbes, et al. Leptospirosis and Weil's disease in the UK, QJM: An International Journal of Medicine. 2012; Volume 105, Issue 12, Pages 1151–1162.
6. Karpagam KB, Ganesh B. Leptospirosis: a neglected tropical zoonotic infection of public health importance-an updated review. Eur J Clin Microbiol Infect Dis. 2020; 39(5):835-846.
7. Soo ZMP, Khan NA, Siddiqui R. Leptospirosis: Increasing importance in developing countries. Acta Trop. 2020; 201:105183.