Scalp Eschar and Neck Lymphadenopathy Associated with Rickettsial Infection After a Tick Bite: A Case Report

Escara no Couro Cabeludo e Linfadenopatia Cervical Associada a Infeção por Rickettsia Após Picada de Carraça: Caso Clínico

Keywords: Lymphadenopathy; Rickettsia Infections; Scalp; Tick Bites/complications
Palavras-chave: Couro Cabeludo; Infecções por Rickettsia; Linfadenopatia; Picadas de carraças/complicações

The presence of a scalp eschar and neck lymphadenopathy (SENLAT) after a tick bite has been commonly associated with a rickettsial infection. This syndrome, firstly recognized in the 1980s in Slovakian and Hungarian patients became a new clinical entity, when, in 1997, the DNA of *Rickettsia slovaca* was detected in a French patient's eschar.[1,2] Due to the most pronounced sign of this disease – the neck enlarged lymph nodes – it was named tick-borne lymphadenopathy (TIBOLA).[2,3] Later, in Spain, some clinicians gave it another designation that includes the genus of the tick involved in the pathogen transmission: *Dermacentor*-borne necrosis erythema lymphadenopathy (DEBONEL).[4]

The etiological agent of TIBOLA/ DEBONEL, *R. slovaca*, was first isolated in 1968 from a *Dermacentor marginatus* tick in the former Czechoslovakia. Further, *R. slovaca* was also detected in ticks from countries across the Eurasian region. In Portugal, *R. slovaca* was first detected in 1995 in *D. marginatus* and, later, also in *D. reticulatus* ticks.[5] Some authors demonstrated that this syndrome can also be caused by other tick-borne pathogens such as *Borrelia burgdorferi*, *Bartonella henselae*, *Coxiella burnetii*, and *Francisella tularensis*, and proposed a new name SENLAT, which does not allude to a specific etiologic agent.[6]

We present a case report of SENLAT concerning an otherwise healthy 37-year-old woman who presented to the emergency department complaining of intense headache and reported removing a large tick from her scalp two days after the onset of symptoms (Fig. 1A). The patient reported a tick bite 10 days earlier, while spending holidays in the mountains of the central region of Portugal (Guarda). She had a necrotic eschar on the scalp surrounded by erythema and painful lymphadenopathies in the retroauricular and cervical regions (Fig. 1B), with no other systemic symptoms and an unremarkable laboratory evaluation. No reactive antibodies against spotted fever group rickettsiae were

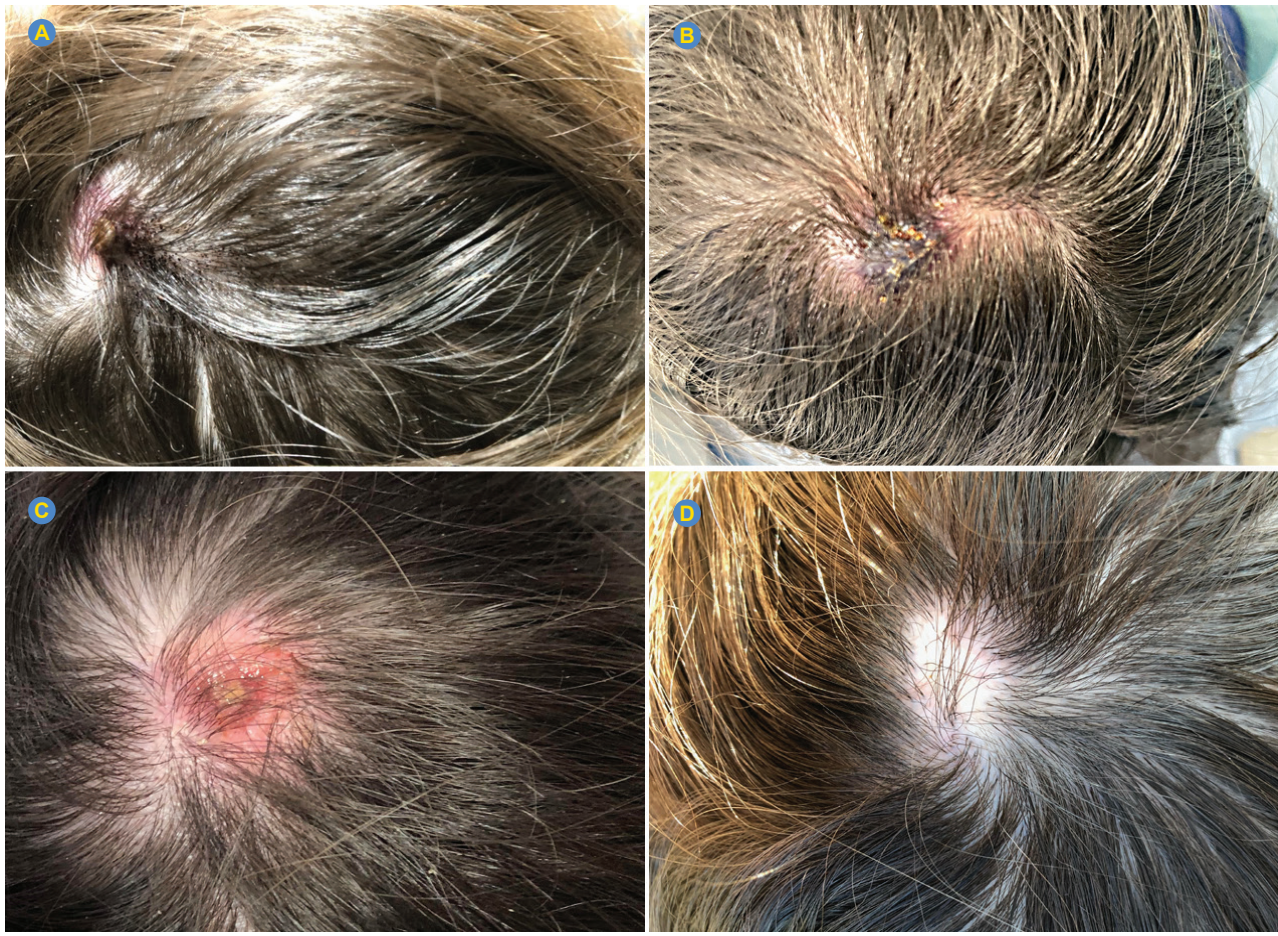

Figure 1 – Adult tick and black eschar on day six after tick bite (A); black eschar on day 10 after tick bite (before treatment) (B); scalp lesion on day 33 after tick bite (after treatment)(C); alopecia one year after tick bite (D).

Table 1 – Tick-borne rickettsioses in Portugal: main features

Disease	TIBOLA/ DEBONEL/ SENLAT	Mediterranean spotted fever	Lymphagitis associated rickettsiosis (LAR)	Rickettsia monacensis infection
Agents	***R. slovaca*; *R. raoultii***	***R. conorii***	***R. sibirica mongolitimonae***	***R. monacensis***
Vector	*Dermacentor marginatus*, *D. reticulatus*	*Rhipicephalus sanguineus*	*Rhipicephalus pusillus* (Portugal, Spain, France); *Hyalomma* spp.	*Ixodes ricinus*
Months of reported human cases	March to May and September to November	Majority of cases May-October (but can occur all year long)	Spring and Summer	Not defined (only one case)
Signs and symptoms				
Fever	Sometimes	Yes	Yes	Yes
Eschar (number and common location)	100% scalp	38% - 60% depends on *R. conorii* strain Location: limbs, trunk, neck	> 80% limbs, trunk and neck	~ 66%
Rash	Rare	Yes	Yes	Yes
Headache	Not reported	Yes	Not reported	Yes
Lymphadenopathy	Always	Sometimes	~50% cases	Sometimes
Lymphangitis	Not reported	Very rare	Yes	Not reported
Mortality rate	No fatal cases reported	3% - 7%	No fatal cases reported	No fatal cases reported
Preferred treatment	Doxycycline			

detected in serological assays at this time, using an indirect chemiluminescence immunoassay commercial kit. The patient was treated with oral doxycycline (100 mg twice a day for 14 days).

One week after the beginning of the treatment, there was total resolution of the symptoms. However, the necrotic eschar was still evident. At this time, a second blood sample was sent to the Portuguese Reference Laboratory for Rickettsioses for testing. No rickettsial DNA was detected in the blood. Serological testing using immunofluorescence assay slides demonstrated a reactive title of 64 for IgG (cut-off title IgG is 128). Eight months later, a third serum sample was collected, showing increased IgG antibodies with a title of 256. One year later, there was secondary alopecia on the affected site (Fig. 1D), that persisted since the black eschar disappeared which occurred one month after the tick bite (Fig. 1C).

This presentation, with no rash and no fever, is compatible with the typical mild illness of infections caused by *R. slovaca* and *R. raoultii*. It is important that physicians are aware of the main features of SENLAT to ensure a correct diagnosis and treatment and be able to make a differential diagnosis from other existing rickettsioses in Portugal with a poor prognosis, such as Mediterranean spotted fever (Table 1).

AUTHOR CONTRIBUTIONS

MAQF, MA, SEP: Data collection and writing of the manuscript.

ICC: Critical review of the manuscript.

RS: Literature review and writing of the manuscript.

All authors approved the final version to be published

PROTECTION OF HUMANS AND ANIMALS

The authors declare that the procedures were followed according to the regulations established by the Clinical Research and Ethics Committee and to the Helsinki Declaration of the World Medical Association updated in 2013.

DATA CONFIDENTIALITY

The authors declare having followed the protocols in use at their working center regarding patients' data publication.

PATIENT CONSENT

Obtained.

COMPETING INTERESTS

The authors have declared that no competing interests exist.

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