

Scalp eschar and neck lymphadenopathy after tick bite in Argentina

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SUMMARY

Scalp eschar and neck lymphadenopathy after a tick bite (SENLAT) is an emerging non-pathogen-specific syndrome characterized by scalp eschar and occipital and/or cervical lymph node enlargement following a tick bite. We report a case of SENLAT

syndrome in an Argentinian patient after exposure to ticks during outdoor work in the Paraná River Delta region.

Keywords: scalp, eschar, SENLAT, ticks, Argentina.

INTRODUCTION

Scalp eschar and neck lymphadenopathy after tick bite (SENLAT) is an emerging syndrome, previously described in Europe only. Characterized by a scalp eschar and occipital and/or cervical lymph node enlargement after a tick bite, SENLAT is associated with variable non-specific symptoms (rash, fever, painful lymph nodes) typically followed by a permanent alopecic area in the site of the tick bite. The syndrome was initially associated to *Rickettsia slovaca* and *Rickettsia raoultii* infection, yet other bacteria including *Rickettsia rioja*, *Rickettsia sibirica mongolitimonae*, *Rickettsia massiliae*, *Bartonella henselae*, *Coxiella* spp., *Borrelia burgdorferi* and *Francisella tularensis* have been considered possible causative agents

[1-7]. In Argentina three tick-borne pathogens of genus *Rickettsia* are recognized to cause human disease currently: *Rickettsia rickettsii* rickettsiosis, related to a severe non-eschar exanthematic disease in Salta and Jujuy provinces; a single case of *R. massiliae* infection in a Spanish tourist infected in Buenos Aires city; and mild eschar-associated rickettsiosis caused by *Rickettsia parkeri* in patients from Paraná River Delta region and Córdoba and La Rioja provinces [8-11]. The current report describes a case of SENLAT syndrome in an Argentinian patient that developed a febrile eschar-associated disease after the exposure to ticks during outdoor work in Paraná River Delta region.

CASE REPORT

On January 24 2019, a 38-year-old male park ranger from an urban area of Buenos Aires city, with no previous medical history and no travel outside of Argentina in the past six months, presented at F.J. Muñiz Hospital in Buenos Aires city.

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He reported two days of malaise, headache and fever of 38.5°C. He mentioned a one-day-work visit to perform outdoor activities in Ciervo de los Pantanos National Park (Paraná Delta, at 67.5 km of Buenos Aires city) 10 days before the onset of symptoms. That night, once at home, he had removed two ticks from his left groin and right



Figure 1 - Enanthem on the soft palate.

abdominal flank. Three days later, on January 16, he noted a crusted lesion on the back of his head and a slightly painful neck lymph node. The emergency physician suspected rickettsiosis and discharged him prescribing treatment with oral doxycycline (100 mg every 12 h) and a new medical assessment, on the next day, by the Argentinian Municipal Center of Regional Pathology and Tropical Medicine (CEMPRA-MT) at the same hospital. On January 25, the physical examination revealed an apparently healthy man without fever, rash or enlargement of inguinal or axillar lymph nodes, with little papules on the left groin and right abdominal flank (where the patient had removed ticks), enanthem on the soft palate (Figure 1), and a 1 cm-diameter eschar surrounded by an erythematous halo on his right occipital scalp with ipsilateral slightly painful posterior cervical lymphadenopathy (Figure 2). Complete blood count and basic chemistry were both within normal parameters. Acute-phase serum sample and a swab of the unroofed eschar were collected. The patient was discharged, told to continue doxycycline for a total of seven days, and to return for



Figure 2 - Occipital scalp eschar surrounded by erythematous halo with ipsilateral posterior cervical lymphadenopathy.



Figure 3 - Absence of alopecia at the 7-week medical follow-up.

follow-up serum collection on January 30, February 18 and March 18. At the first follow-up appointment the patient reported complete resolution of symptoms 48 h after initiation of doxycycline therapy, and remained asymptomatic up to the third appointment with no alopecia observed on the initial eschar site (Figure 3).

Considering a probable tick-borne rickettsiosis, all four collected sera were tested for antibodies against spotted fever group rickettsiae (SFG-R) by immunofluorescence with the *Rickettsia* IFA IgG Kit (Focus Diagnostics, Cypress, CA, USA). Total DNA extracted from the swab sample using QIAamp blood mini kit (QIAGEN, Germantown, MD, USA) was tested for *Rickettsia* spp. DNA by conventional PCR with primers targeting a 401-bp fragment of the rickettsial *gltA* gene [10]. Neither the sequential serum samples nor the swab sample were positive for *Rickettsia*.

■ DISCUSSION

SENLAT is an emerging not pathogenic-specific clinical entity that is characterized by a local infection, but that can be controlled by the immune system, as reflected by the local lymphadenopathy [1]. Although different bacteria have been related to SENLAT syndrome, some pathogenic rickettsiae seem to be the main etiological agents [1-4]. Unfortunately, in our case, serological and molecular tests were negative, and we were not able to classify this case as a confirmed or probable rickettsiosis. Nevertheless, our case study clearly matches with the clinical definition for SENLAT [1]. Thus, we presumed that *R. parkeri* could have been the cause of this syndrome considering the three following reasons: the Paraná River Delta region, where the patient was bitten by ticks, is a recognized "hot spot" for *R. parkeri* infection; the patient developed an autochthonous febrile eschar-associated illness with regional lymphadenopathy, which in Argentina points to typical *R. parkeri* rickettsiosis; and, as shown in previous and recent studies on clinical and epidemiological characteristics of *R. parkeri* infection in the country, the eschar is located in the scalp/neck and trunk in $\approx 60\%$ of cases [10-13].

Failure to confirm the suspected aetiological agent in the patient, by both serological and molecular methods, could be explained by the following reasons: first, failure to develop detectable SFG-R

antibodies (even in the 7-week convalescent serum sample) caused by the prompt doxycycline treatment (second day of illness in our case). This fact was pointed by Fournier et al., in 2002, that described 17/65 (26%) patients with African tick-bite fever, in which both the acute-phase and the convalescent-phase serum samples were negative for antibodies reactive with *R. africae* by microimmunofluorescence [14]. In the later report, 14 (82%) of these seronegative patients received doxycycline in the first week of clinical disease. Interestingly, *R. africae* and *R. parkeri* are two phylogenetically closely related species [15]. Second, we used conventional PCR for rickettsial DNA detection from the swab sample. Although eschar swabbing has shown to be useful for molecular detection of *Rickettsia* spp., most studies that validate this method were carried out with qPCR, which is clearly more sensitive than conventional PCR [16, 17].

Our results point that SENLAT does occur in Argentina and expand the recognition of this syndrome beyond Europe, suggesting that other eschar-associated rickettsiosis, such as *R. parkeri* infection, could be implicated in its etiology in the American continent. Anyway, this case report could be the basis for future studies to elucidate and confirm the aetiological agent in SENLAT syndrome in Argentina.

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Conflict of interest

The authors declare no financial or personal conflicts of interest in the study.

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