
Anaphylactic Shock Caused by Tick Bites

Filipe Dantas-Torres

Department of Immunology, Centro de Pesquisas Aggeu Magalhães, Fundação Oswaldo Cruz, Pernambuco, Brazil

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I recently read an interesting article by Valls et al [1], in which they report a case of anaphylactic shock caused by tick bites. The case was elegantly presented, but I would like to draw the authors' attention to an error in the nomenclature of the tick. One of the principles of the International Code of Zoological Nomenclature (ICZN) is that the name of each taxon must be unique (principle of homonymy). The correct spelling of the tick species name they referred to is *Rhipicephalus sanguineus* (ending in -neus) instead of *Rhipicephalus sanguineous* (ending in -neous). The species epithet *sanguineous* has been used elsewhere, but it is not valid [2].

Rh sanguineus (*Rh* being the abbreviated form *Rhipicephalus*, to differentiate from *R*, the abbreviated form of *Rickettsia*), which is commonly called the brown dog tick or the kennel tick, belongs to a group (or complex) of approximately 10 closely related species [3]. Adult ticks belonging to the *Rh sanguineus* group are almost morphologically indistinguishable, for example, *Rh sanguineus* sensu stricto and *Rh turanicus*. In fact, the identification of ticks belonging to the *Rh sanguineus* group on a morphological basis is not an easy task. In northeastern Spain, for instance, 4 *Rhipicephalus* species are known to occur (*Rh sanguineus* sensu stricto, *Rh turanicus*, *Rh bursa*, and *Rh pusillus*) [4] and this may cause confusion, even among specialists. Thus, it would be very useful for the reader if Valls et al could provide further information about tick collection and identification. When species identification is doubtful, the use of the term *Rh sanguineus*-group ticks would be more appropriate [5].

Similarly, Valls et al could give more details about the ticks they used in their assays. Were they adults, nymphs, or larvae? Were they male or female? If female, were they nonengorged, partially engorged, or completely engorged? As these factors can affect protein expression in the tick midgut and salivary glands [6], this information is quite relevant and should be provided.

As Valls et al [1] said, *Rh sanguineus* ticks are known vectors of many pathogens infecting dogs. Just as important, *Rh sanguineus* ticks have also been implicated in the transmission of major pathogens to human beings. In the

Mediterranean region, *Rh sanguineus* ticks are considered to be the main vectors of *Rickettsia conorii*, the etiological agent of Mediterranean spotted fever. In Arizona, *Rh sanguineus* ticks have recently been implicated in the transmission of *Rickettsia rickettsii*, the etiological agent of Rocky Mountain spotted fever [7].

Allergy to tick bites is relatively sporadic [8], considering the immeasurable number of individuals exposed to ticks worldwide every day. The report of Valls et al [1] points to the possible risk of human exposure to tick-borne pathogens in the region where the patient is from.

References

1. Valls A, Pineda F, Belver M, Caballero T, López Serrano MC. Anaphylactic shock caused by tick (*Rhipicephalus sanguineus*). *J Investig Allergol Clin Immunol*. 2007;17:279-80.
2. Barker SC, Murrell A. Systematics and evolution of ticks with a list of valid genus and species names. *Parasitol*. 2004;129:S15-S36.
3. Walker JB, Keirans JE, Horak IG. The genus *Rhipicephalus* (Acari, Ixodidae): A guide to the brown ticks of the world. Cambridge: Cambridge University Press; 2000. p. 643.
4. Estrada-Peña A, Estrada-Peña R, Peiró JM. Differentiation of *Rhipicephalus* ticks (Acari: Ixodidae) by gas chromatography of cuticular hydrocarbons. *J Parasitol*. 1992;78:982-93.
5. Matsumoto K, Brouqui P, Raoult D, Parola P. Experimental infection models of ticks of the *Rhipicephalus sanguineus* group with *Rickettsia conorii*. *Vector Borne Zoonotic Dis*. 2005;5:363-72.
6. Martín Hernández R, Cuellar del Hoyo C, Olmeda Garcia AS, Rodríguez Rodríguez JA. Analysis of stage-specific and shared antigens derived from *Rhipicephalus sanguineus* by electrophoresis and western blotting. *Med Vet Entomol*. 1995;9:358-64.
7. Demma LJ, Traeger MS, Nicholson WL, Paddock CD, Blau DM, Eremeeva ME, Dasch GA, Levin ML, Singleton J Jr, Zaki SR, Cheek JE, Swerdlow DL, McQuiston JH. Rocky Mountain spotted fever from an unexpected tick vector in Arizona. *N Engl J Med*. 2005;353:587-94.
8. Acero S, Blanco R, Bartolomé B. Anaphylaxis due to a tick bite. *Allergy* 2003;58:824-5.

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Filipe Dantas-Torres

Departamento de Imunologia,
Centro de Pesquisas Aggeu Magalhães
Fundação Oswaldo Cruz
CP 7472

Recife 50670-420, Pernambuco, Brazil
Tel.: +55 81 21012640; Fax: +55 81 34532449
E-mail: fdt@cpqam.fiocruz.br

Species Identification of *Rhipicephalus sanguineus*

A Valls

Department of Allergy, Hospital Universitario La Paz, Madrid, Spain

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I am very grateful to F Dantas-Torres for the enriching comments. With respect to the identification of the ticks, these were provided by the patient, a goatherd who collected them from his own goats, with which he worked daily [1].

The identification of the species involved in the patient's anaphylactic reaction was based on known morphological criteria, bearing in mind the difficulties in identifying ticks belonging to the *Rhipicephalus sanguineus* group, which are almost morphologically indistinguishable, as mentioned by F Dantas-Torres. The collected ticks were obtained from central Spain. The geographic source and the animals affected (goats) helped us with our final species identification.

The ticks used for protein extraction were all adults, but the gender was not identified. To date, no relevance has been given

to role of gender [2-4] in possible allergic reactions by ticks, although it would make for interesting studies in the future.

References

1. Valls A, Pineda F, Belver M, Caballero T, López-Serrano MC. Anaphylactic shock caused by tick (*Rhipicephalus sanguineus*). *J Investig Allergol Clin Immunol*. 2007;17:279-80.
2. Acero S, Blanco R, Bartolomé B. Anaphylaxis due to a tick bite. *Allergy* 2003;58(8):824-5.
3. Sirianni MC, Mattiacci G, Barbone B, Mari A, Aiuti F, Kleine-Tebbe J. Anaphylaxis after *Argas reflexus* bite. *Allergy*. 2000;55(3):303
4. Beaudouin E, Kanny G, Guerin B, Guerin L, Plenat F, Moneret-Vautrin DA. Unusual manifestations of hypersensitivity after a tick bite. Report of two cases. *Ann Allergy Asthma Immunol*.

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Ana Valls Sánchez

Hospital General Universitario La Paz
Paseo de la Castellana, 261
28046 Madrid, Spain
E-mail:vallsana@hotmail.com