

WHAT'S BITING ME, DOC?

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ABSTRACT

A case of annular erythema due to a tick bite presenting in a man after a holiday in Australia is described. Although tick bites are uncommon in an urban city like Singapore, ticks are of medical importance because of the possible dermatological and systemic complications due to transmissible tick-associated pathogens. A brief review of the management of tick bites is discussed.

Keywords: annular erythema, *Rhipicephalus sanguineus*, tick, tick bite

INTRODUCTION

Tick bites are uncommonly encountered in urban cities such as Singapore. However, with increasing travel and domestic pet ownership amongst Singaporeans, medical practitioners should be aware of the management and potential complications that may be associated with tick bites.

CASE REPORT

A 61-year-old man presented with a mildly pruritic but painless "crusted papule" that was associated with an expanding erythematous annular rash over his right infraclavicular area, 10 days after returning from a holiday in New South Wales, Australia. He had stayed in a suburban area and had handled a domestic pet dog, but did not recollect being bitten by any insects or ticks. On closer inspection, the "crusted papule" was in actuality an engorged tick that was firmly embedded in his skin, with some secondary crusting and scaling seen at the point of attachment. This was surrounded by a 5 x 5 cm annular erythema (Figure 1). Systemic review and examination was unremarkable and the patient was otherwise well.

The tick was removed intact with a medium-toothed forceps under local anaesthesia. The patient declined all blood and serological tests, as well as a skin biopsy to exclude any remaining tick mouthparts. He was empirically treated with Doxycycline 100mg twice daily for two weeks, together with topical antibiotic and corticosteroid creams for his rash. On review 6 weeks later, the patient remained well with no residual rash noted.

Subsequent entomological examination of the tick identified it as the brown dog tick, *Rhipicephalus sanguineus*.

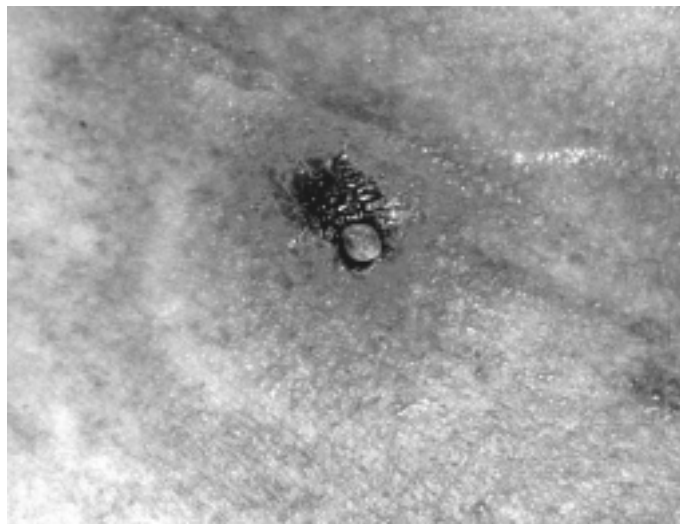


Figure 1: Concentric, annular erythema with an engorged brown dog tick (*R. sanguineus*) firmly embedded in the center of the lesion.

MANAGEMENT

The management of tick bites includes immediate tick removal and the diagnosis and treatment of possible tick-borne diseases.

Early tick removal is vital as the risk of disease transmission increases significantly after 24 hours of attachment⁽³⁾. A variety of methods have been proposed for the removal of ticks, including the application of various home-remedies, solvents, and heat^(1,3), but these methods are not usually necessary and may cause further skin irritation and injury to the patient. It has been recommended that a blunt, medium-tipped, angled forceps be used to grasp the tick as close to the skin as possible^(4,6). A constant slow but firm traction is then exerted in the direction perpendicular to the skin, until the mouthparts are dislodged. A jerking motion is best avoided as it may cause the embedded mouthparts to separate from the body of the tick. Remaining tick parts in the skin may lead to secondary infection, chronic eczema and granuloma formation⁽²⁾, and should be removed by excision. Any secondary bacterial infection should be treated and topical corticosteroids may be indicated as anti-inflammatory agents.

Routine antimicrobial chemoprophylaxis is controversial as most tick bites are self-limiting^(6,7). However, it has been shown that a single 200mg dose of doxycycline given within 72 hours after an *Ixodes scapularis* tick bite can prevent Lyme disease, and should be offered to patients who have been bitten in high-risk endemic areas⁽⁸⁾. However, prompt empirical antimicrobial treatment is indicated in those with acute systemic signs, as rapid diagnostic testing and tick identification is not readily available in Singapore. Most tick-borne infections such as Lyme

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disease, rickettsial fevers and ehrlichiosis respond to tetracyclines⁽⁴⁾.

Finally, the importance of primary prevention against tick bites cannot be overemphasized⁽⁴⁾. This includes the avoidance of infested areas, use of personal protection with DEET (N,N-diethyl-3-methylbenzamide) containing tick repellents, the wearing of appropriate permethrin-treated clothing and the treatment of potential sources, such as infested stray and domestic dogs.

DISCUSSION

Ticks are obligate blood-sucking members of the class Arachnida that can infest a diversity of vertebrate hosts, including humans. The two major families of ticks are the soft ticks (Argasidae) and the hard ticks (Ixodidae)⁽¹⁾. Humans are usually infested with hard ticks, which can be clinically recognized by its rigid and shiny dorsal shield, as seen here.

Dermatological reactions to tick bites are variable and range from non-specific findings of indurated erythematous papules and nodules, to severe reactions such as extensive swelling, eczematization, necrosis and ulceration^(2,3). Recognition of tick bites can be difficult unless the history is suggestive or the tick remains in-situ as in this case. While clinical findings of annular erythema in our patient may be non-specific and reactive in nature, it should lead one suspect erythema chronicum migrans, which occurs in 60 to 80% of cases of acute Lyme borreliosis⁽⁴⁾. Chronic skin lesions include tick bite granuloma⁽³⁾ or the more uncommon but specific findings of acrodermatitis chronica atrophicans, which is a late manifestation of Lyme disease^(2,4).

Many tick-borne diseases have been described, including potentially fatal conditions such as tick paralysis, ehrlichiosis and tick-associated rickettsial fevers⁽⁴⁾. The presence of constitutional signs and symptoms such as fever, headache, dyspnea, lymphadenopathy and neurological deficits suggest underlying systemic disease and should be specifically examined for in all cases of tick bites. Important clues to determine the possible pathogens include tick species identification, and knowing the location and country where the tick bite occurred, as diseases are often tick and geography-specific. In our case, the *Rhipicephalus sanguineus* tick has a worldwide distribution, including Singapore⁽⁵⁾, and has been associated with diseases such as ehrlichiosis, tularemia, Q fever and *Rickettsia conorii*-associated Boutonneuse fever^(2,3). Other medically important ticks include Ixodes ticks, which are the principal vectors for Lyme disease, and Dermacentor ticks, which are associated with Rocky Mountain spotted fever and tick paralysis in the United States^(2,3).

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