



CASE REPORT

Tick Bite by Nymphal *Amblyomma testudinarium*

Yeong Ho Kim, Ji Hyun Lee, Young Min Park, Jun Young Lee

Department of Dermatology, Seoul St. Mary's Hospital, College of Medicine, The Catholic University of Korea, Seoul, Korea

Ticks are parasites that usually suck the blood of wild or domestic animals; rarely, they ingest human blood and spread various febrile infectious diseases along with skin problems. Out of 40 cases of tick bite reported in Korea, only 3 were caused by nymphal ticks, and tick bites by nymphal *Amblyomma testudinarium* have not been reported previously. Herein, we report a rare case of tick bite by nymphal *A. testudinarium*. A 57-year-old woman presented with an asymptomatic solitary erythematous nodule on the left thigh that had been present for 6 days. The tick, which the patient removed from the lesion and brought to the hospital, was identified as a nymphal *A. testudinarium*. Doxycycline (200 mg) was used as treatment, and after seven days of use, the patient improved and no other lesions were detected. (**Ann Dermatol 28(6) 762~764, 2016**)

-Keywords-*Amblyomma testudinarium*, Nymph, Tick bites

INTRODUCTION

Amblyomma testudinarium belongs to the Family Ixodidae and is an arthropod¹. It is a blood sucking parasite which lives outside the body¹. When this parasite emerges from the egg, it is classified into three stages: a larva with three

pairs of legs, a nymph with four pairs of legs, and an imago with a developed reproductive organ that makes it possible to distinguish its sex¹. Although ticks usually suck the blood of wild or domestic animals, ticks can also prey on humans, which spreads various febrile infectious diseases along with skin problems^{1,2}.

Since 1982, there have been approximately 40 cases of tick bite reported in Korea, and most of them were caused by *Ixodes nipponensis*². Out of 40 cases of tick bites, 3 were caused by imago *A. testudinarium* and tick bite by nymphal *A. testudinarium* has not been reported yet^{3,4}.

CASE REPORT

A 57-year-old woman presented with an asymptomatic solitary erythematous nodule on the left thigh for six days (Fig. 1). Seven days before the visit, she fell off on a hillock located at Oryoung-ri, Mujeong-myeon, Damyang-gun, Jeollanam-do. She brought the tick which was found in her thigh, which she had removed by herself at home (Fig. 2, 3). There were no systemic symptoms such as itching or fever at presentation. On physical examination, an asymptomatic, solitary, erythematous nodule measuring 0.4 cm in size was seen on the left thigh.



Fig. 1. A solitary erythematous nodule on the left thigh.

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Corresponding author: Jun Young Lee, Department of Dermatology, Seoul St. Mary's Hospital, College of Medicine, The Catholic University of Korea, 222 Banpo-daero, Seocho-gu, Seoul 06591, Korea. Tel: 82-2-2258-6222, Fax: 82-2-599-9950, E-mail: jylee@catholic.ac.kr

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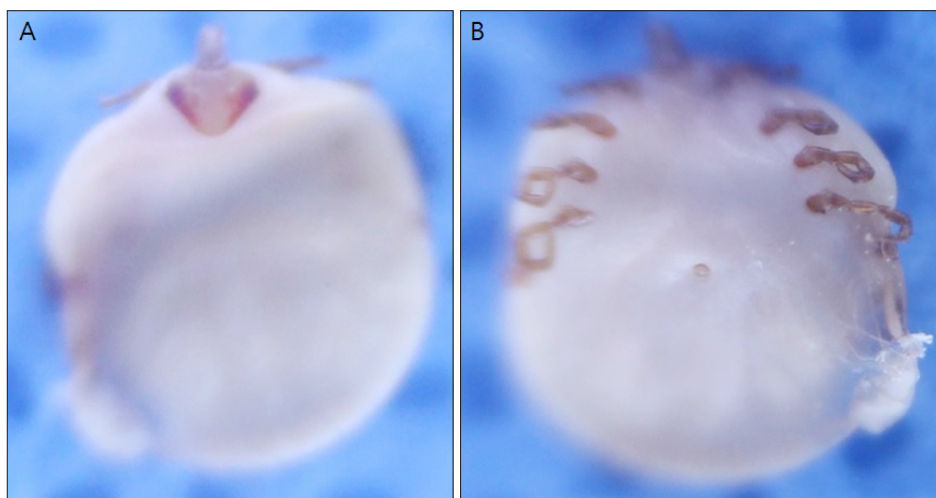


Fig. 2. Dermoscopic finding of nymphal *Amblyomma testudinarium*. (A) Dorsal side, (B) ventral side.



Fig. 3. Optical microscopic finding of nymphal *Amblyomma testudinarium*. (A) $\times 40$, (B) $\times 100$.

A biopsy specimen from this nodule was taken for histopathological analysis. A skin biopsy revealed focal parakeratosis, mild acanthosis of the epidermis, and mild perivascular lymphohistiocyte infiltration.

The tick was a white, 5.5×4.5 mm mass. It showed characteristic findings of the family Ixodidae, with a hypostome on the front of the body and a scutum on the dorsal side. The scutum was ornate, with a pair of eyes located on it, and a festoon, a petal-like curve, was detected on the back of the body. This tick was therefore classified as genera *Amblyomma*. It had four pairs of legs with a 0.4-mm mouth, which had 0.5-mm tactile perception organs on both sides. The arrangement of the mouth denticles was 3/3 and no gonopore was found on the abdomen. While the larva of *A. testudinarium* has three pairs of legs, the imago and nymph have four pairs of legs¹. In addition, the denticle arrangement of the imago is 4/4 and the imago has a gonopore on the abdomen¹. These facts suggest that the tick in our case is a nymph of the species *A. testudinarium*. For prophylaxis of Lyme disease the patient re-

ceived 200 mg oral doxycycline for seven days. After seven days of treatment, the lesion showed improvement.

DISCUSSION

Reported Korean tick bites typically involve *I. nipponensis*, *I. ovatus*, *I. monospinosus*, *I. persulcatus*, *Haemaphysalis flava*, *H. longicornis* and *A. testudinarium*, which all belong to the Family Ixodidae (hard tick)^{5,6}. Bites of the nymphal *A. testudinarium* have not been reported previously.

Ticks hatch after weeks and months from eggs⁷. They first become larvae with three pairs of legs, and, after sucking blood for three to seven days, they become nymphs with four pairs of legs and no reproductive organs⁷. After sucking blood for seven to ten days, the nymph turns to an imago with four pairs of legs and a reproductive organ⁷. After mating, the female imago starts sucking blood for one to four weeks and will die after laying 3,000 to 8,000 eggs over a few weeks⁷. Since the larva and nymph are smaller and have a shorter blood sucking period than the

imago, tick bites by the larva or nymph are often unnoticed. This may be the reason that most of the reported cases involve the imago.

The larva, nymph and imago can all carry causative agents such as *Rickettsia rickettsia* which causes Rocky Mountain spotted fever, *Borrelia burgdorferi* which causes Lyme disease, and *Coxiella burnetii* which causes Q fever^{8,9}. They can also cause local skin reactions such as erythematous nodules as well as systemic reactions such as hypersensitivity reactions, fever, pruritus and urticaria^{8,10}. Since the severity of local skin reactions are in direct proportion to the blood sucking time and the size of the tick's mouth⁸, the severity may increase from the larva to the nymph to the imago.

The cases of severe fever with thrombocytopenia syndrome (SFTS) have been reported since 2010. SFTS is caused by SFTS virus and this virus can be transmitted by infected ticks³. The main vector of SFTSV has been considered to be a *H. longicornis*^{3,11}. But the SFTS virus also detected in *I. nipponensis* and *A. testudinarium* in Korea^{11,12}. The incubation period of SFTS is 6 to 14 days¹¹. Lyme disease is an infectious disease caused by tick bite of *I. scapularis*⁹. Symptoms of Lyme disease include erythema migrans, acute viral-like illness, and febrile episodes⁹. Scrub typhus is a rickettsial illness caused by *Orientia tsutsugamushi* and it can cause flu-like illness with fever, headache, and myalgia¹³. So if the patient presents leukopenia, thrombocytopenia, and gastrointestinal symptom with fever after tick bite, physicians should consider SFTS as well as scrub typhus and other febrile infectious disease^{3,9,11-13}. Doxycycline is a prophylactic agent for Lyme disease and a drug of choice for scrub typhus^{9,13}.

A. testudinarium is a tick of tropical regions usually found in Southeast Asia, including India, Myanmar, Thailand, Malaysia, Indonesia, the Philippines, Taiwan and Japan⁵. In Japan, 10 percent of tick bites involved *A. testudinarium* and usually took place at the southwest region of Japan⁵. They are also found in the southern regions of Korea such as Jeju Island, Jeollanam-do Suncheon, Yeonggwang-gun, and Gyeongsangnam-do Tongyeong, and Changwon^{5,6,12,14}. This implies that *A. testudinarium* thrives in rainy and warm subtropical climates.

This case took place at Jeollanam-do Damyang-gun, which is located in the southern part of South Korea. It is the first reported tick bite case in Korea that did not occur on the coast. Humidity in the summer and the warmer weather due to global warming might have made Damyang-gun habitable for *A. testudinarium*; for these reasons, their habitat may also expand to the northern parts of Korea.

Tick bites can cause not only local skin infections but also systemic infections by bacteria, protozoa and viruses.

Thus, it is important to cover the body with clothes when going out to the field or mountain to protect the body from direct exposure to soil or grass. Tick bites peak the in spring to fall. Therefore, a high index of clinical suspicion for tick bite is necessary in patients with newly developed lesions after outdoor activities during these seasons.

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