

Tick infestation on lower abdominal skin: A case report

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Abstract Ticks are small obligate, hematophagous ectoparasites belonging to class arachnida and have significant impact on human and animal health as they are excellent vectors for transmission of various diseases second only to mosquitoes.² Humans, pets and wild animals are all suitable hosts for this blood-feeder. They cause considerable harm to livestock, dairy industry and humans both by direct parasitic damage and transmission of various viral, bacterial and protozoal diseases. We report a case of tick infestation on lower abdominal skin of a 42 yrs. old woman who had history of contact with cattle.

Key words

Ectoparasite; Hematophagous; Class Arachnida; Blood feeder; Parasitic damage.

Introduction

Infestation of ticks in humans is quite rare to see in clinical practice probably because most of such infestations go unnoticed by patients and less likelihood of tick being infectious. For a doctor to recognize tick infestation at an earliest possible time is mandatory to avoid the possible infectious outcomes in future and save the patients.

All species of tick are widely distributed in the world and tend to prevail more in hot and desert or arid regions with relatively high humidity, because they need moisture in the air to undergo maturation from immature forms, a process called metamorphosis. Tick infestation rate was around 33% and 22% in cattle and buffaloes respectively, in different areas of Khyber Pakhtunkhwa, Pakistan. Tick infestation

rate in cattle and buffaloes is rapidly increasing especially in warm and humid climates of country (34.79%) versus cold chilly areas with low humidity (18.63) leaving a major impact on livestock health and dairy industry.¹

Out of total 850 known species of tick, largest family is Ixodidae having 13 genera.⁵ Annual incidence of tick-transmitted infections worldwide is rapidly increasing with Lyme disease being the commonest amongst them. Annual incidence in United States is approximately 30,000 cases.⁴

The major hazards caused by ticks, however, are, due to their ability to transmit various bacterial, viral & protozoal diseases both to humans and animals.^{2,3}

The risk of tick-transmitted infections depends upon two epidemiological parameters both of which are measurable, one: density of infected ticks graded as high, low, moderate or minimum, second: human exposure.

Case report

We report the case of a 42 years old lady, who

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presented to our outpatient department with a furuncle like lesion on lower abdomen for 35 days. The lesion started as a small brown papule that was initially painless. It started increasing in size till it became a furuncle. It was only after few weeks that it drew patient's attention because she started having pain in it and also noticed some tick parts protruding out.

There was no history of fever, rash, joint pains or any other systemic ailments. Her appetite and general condition was also good. She gave history of frequent visits to a farm house close to her residence, however there was no history of any other family member having similar problem.

On examination, there was a big furuncle like lesion on the lower abdomen. It was dusky red in color and dark brown engorged tick was visible to naked eye with its mouth parts buried inside the skin. There was a little serous discharge coming from one side but no obvious ulceration or bleeding was noted at that time. Examination of rest of her skin was unremarkable for any similar lesion or rash.

We extracted the tick under local anesthesia with sustained gentle traction with the help of a plane forceps but it was only after 20 minutes that we could retrieve it complete and alive.



Figure 1 Furuncle- like lesion on lower abdominal wall with tick parts visibly protruding out.



Figure 2 Extracted tick with intact body parts including four pairs of legs and eyes.

Detailed examination of tick as well as abdominal skin was performed to rule out any broken tick parts left inside. It was a hard tick of genus ixodes and this was morphologically confirmed by the entomologist. A small punch was taken from the edge of ulcer and examined under the microscope.

Histopathologically, it showed foci of spongiosis in epidermis along with superficial and deep dermal mixed lymphohistiocytic infiltrate with scattered eosinophils. There was a prominent element of perivascular reaction as well.

Patient was put on a 07-days course of systemic doxycycline in dose of 100mg twice daily and she made uneventful recovery later on.

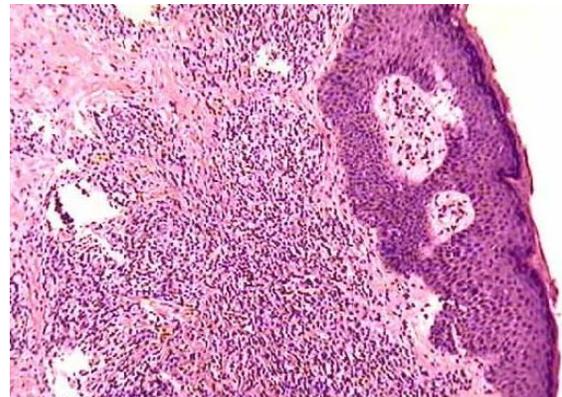


Figure 3 Histopathology of tick infested skin. Spongiosis and acanthosis visible in epidermis while acute and chronic inflammatory infiltrate visible in dermis.

Discussion

Arthropods and insects probably have evolved 600 million years ago and since then parasitism has been a major problem. In recent years parasitism has caused a serious nuisance to dairy industry of Pakistan. In this context, the most common tick species prevailing are *Hyalomma*, *Boophilus*, *Haemaphysalis* and *Rhipicephalus*.¹

Taxonomically all ticks are classified amongst mites into class arachnida having 04 pairs of legs. There are two well established families ixodidae (hard ticks) and argasidae (soft tick). All developmental stages of ticks are parasitic on vertebrates. Adult tick size ranges between 2.2mm (unfed male) to 13mm (fed female).⁵

There has been a recent increase in scope and magnitude of tick-borne disease worldwide. This is partly due to many epidemics in the past for example tick borne encephalitis in Europe, kysanur forest disease in India, Congo hemorrhagic fever in Turkey, Rocky Mountain Spotted Fever in Arizona & California.⁶

Tick population is more active during warmer months of the year though this varies by geographic region and climate. Areas with woods, bushes, high grass, or leaf litter are likely to have high number of ticks.³

Some of tick-transmitted infections are very common (more than 10,000 new cases per year) e.g. Lyme's disease: Others, in the range 1000-10,000 new year are called common & include tick-borne encephalitis, relapsing fever, spotted fever group rickettsiosis, ehrlichiosis and anaplasmosis. Amongst moderately common diseases (100-1000 new cases) are Colorado tick fever, babesiosis and tick borne tularemia.⁶

Most of the time ticks bite without transmitting serious infections and the illness is limited to

small furuncle like lesions. Waiting in low vegetation, as soon as they find a susceptible host, they insert the hypostome into host's skin. This attachment phase lasts many days (7-14) and ticks suck blood throughout this phase. Optimal humidity and temperature required for reproduction and growth of ticks is 85% and 26-37C° respectively.¹

A person can only get infected if bitten by an infected tick and usually most of the ticks are uninfected. In most places in the United States, only 30-50% of deer ticks are infected with *Borrelia burgdorferi*.³

Lyme's disease is one of the most common tick-transmitted infections. It can be divided into three stages depending upon the extent of infection. 1st stage is a localized Lyme's disease manifesting 3-33 days after tick bite as erythema migrans and flue-like illness with fever, joint pains, fatigue & chills. Days to weeks after tick bite, early disseminated disease presents as multiple small rings of erythema migrans and symptoms of early neuro-borreliosis like facial palsy, aseptic meningitis, polyradiculitis and cranial nerve palsies, arthritis and carditis.

Late Lyme's disease presents months to years after infection as acrodermatitis chronica atrophicans, chronic Lyme's arthritis and chronic neurological disorders.⁷

Currently tick control methods are primarily based on wearing light colored clothing with long boots and gloves, using insect repellents e.g. 20-30% DEET and application of permethrin to their clothing, examining their body and suiting after return from a high risk outdoor visit, and of course use of tick vaccines.⁸

Commercially, many vaccines are currently available for control of cattle ticks & found

moderately effective too, however, there is still room for new antigens to be discovered to increase this efficacy further.²

Unfortunately, in most of our tertiary care centers, specific diagnostic tests for tick-borne diseases are not available. Keeping in mind the seriousness of all these infections, treatment with oral antibiotics is often justified depending on suggestive clinical picture, where definitive history of exposure is also there.

Conclusion

As the global incidence of tick-borne infections is rapidly increasing coinciding with expanding hot humid climates, it is undoubtedly important that health care professionals especially dermatologists be able to diagnose and manage the diverse & overlapping clinical presentations of these diseases.

In addition, some tick-borne diseases are associated with high mortality or morbidity, and may frequently lead to considerable fear among the public at large, so it is prudent to diagnose tick bites and tick borne infections at an early stage.

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Author's contribution

AG: Identification and management of the case, manuscript writing, has given final approval of the version to be published.

ZSC: Management of the case, critically review the case, has given final approval of the version to be published.

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