

## Tick Infestation of Lower Eyelid: A Rare Occurrence

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**Abstract:** Globally ticks are the important arthropod vectors for transmission of numerous infectious agents and are responsible for causing human and animal diseases. Tick bite is responsible for many disease in India. Most common are kysanur forest disease, and carimean-congo hemorrhagic fever that have ocular manifestation also. Tick infestation of lower eyelid in humans is very rare condition. We reported a case of 62 year old Indian male who presented with tick infestation of lower eyelid margin.

### I. Introduction

Globally, ticks are the important arthropod vectors for transmission of numerous infectious agents and are responsible for causing human and animal diseases.<sup>1</sup> Human tick-borne diseases have been recognized since the discovery of Lyme borreliosis, which is transmitted by Ixodid ticks.<sup>2</sup> Ticks are obligatory bloodsucking ectoparasites that infest mammals, birds, reptiles and amphibians.<sup>3</sup> Two classes of tick are responsible for disease in humans: hard ticks (family Ixodidae) and soft ticks (family Argasidae). Soft ticks take smaller, take quicker blood meals at shorter intervals, and can transmit pathogens much more quickly (within a minute of biting) than hard ticks (hours or days). However, hard ticks are more common, harder to remove and more likely to transmit disease.<sup>4</sup>

However, only 10% of the total hard and soft tick species are known to be involved in disease transmission to domestic animals and humans.<sup>3</sup> Hyalomma anatolicum and Haemaphysalis spinigera are the two important species of ticks present in India, which are responsible for causing the fatal tick-borne viral diseases of Crimean-Congo hemorrhagic fever (CCHF) and Kyasanur forest disease (KFD), respectively.<sup>5,6</sup> And less common are Imported tick born spotted fever, Lyme disease, Omsk Hemorrhagic Fever (OHF), Tick borne encephalitis (TBE). There are several other rickettsial infections like rickettsioses and Boutonneuse fever (caused by Rickettsia conorii found in Europe), transmitted by Rhipicephalus sanguineus and other tick species. Man is an occasional host. The transmission depends on several factors, especially on the duration of the tick's presence in the host body and on whether the tick is infected or not.<sup>7</sup>

Ticks infestation to human is a rare phenomenon they usually infest cattles, deers, birds, wild animals like buffalo, tiger, leopard, bullock, rats, jungle fowl, dogs but dog ticks rarely attach to humans. Tick infestation to human ocular tissues is still rare. Here we are presenting a case of tick infestation of lower eyelid.

### II. Case report

A 62 year old male presented with the chief complaint of a small reddish swelling over central part of lower eyelid margin, right eye. He noticed the swelling when he woke up in the morning. It was associated with mild itching but there was no associated pain or any other associated ocular symptoms like conjunctival congestion and foreign body sensation. There was no associated systemic symptom. The patient was ex-service man and had cattles as domestic animals and was sleeping at ground, that night.



Fig 1: Tick in lower eyelid before removal

On examination there was greyish-red non tender swelling in the lower eyelid of right eye, close to the lid margin. No associated lymphadenopathy was present on examination. Before proper examination with slit lamp, a provisional diagnosis of an eyelid capillary hemangioma was made. His best corrected visual acuity was 6/6 in both his eyes. On examination with slit lamp under magnification it revealed an insect body which was confirmed by touching its body with forceps and observation that it was projecting his legs out of body which were hiding behind the big insect body.

Rest of the ocular findings were normal including adnexa, anterior segment and posterior segment. Patient is found pseudophakic in both of his eyes and his cataract surgery was performed 4 years back.

The tick was removed with plane forceps without leaving any residual mouth parts. The site was inspected and it was found that blood was oozing from attachment site. There was slight swelling noted over infested area. No chemical was applied for the help of removal of tick as it may cause irritation to the eyes. After removal of the tick site of attachment was thoroughly cleaned with normal saline and antiseptic solution (povidone iodine solution). Ciprofloxacin 0.3% ointment was applied to the affected area. Topical ointment was advised as four times daily for five days to prevent any secondary bacterial infection. The wound was healed without any scarring.



Fig2: Tick that infested lower eyelid

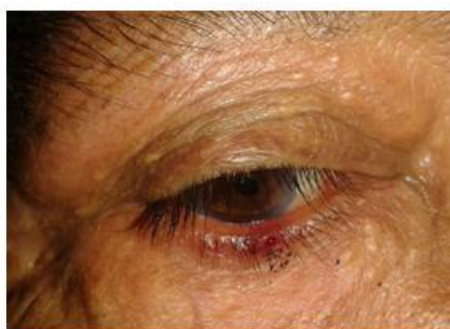


Fig2: Lower eyelid after tick removal

Patient was properly explained about possible sign and symptoms of tick born diseases mentioned above more common diseases in Indian scenario were explained in more detail. He was told about prophylaxis measures like wearing glasses while being close with cattles and covering hands and open body parts with cloths. Patient was referred to the infectious diseases department for further evaluation. According to infectious disease department's recommendation, blood testing had been done.

Tick was send to laboratory and it was found to be of Ixodid family and haemaphysalis genera. This tick usually infest cattles in household animals.

### III. Discussion

Ticks are blood-sucking arthropods of the family Ixodidae. The most frequent manifestations in the eye are conjunctivitis, uveitis, keratitis and vasculitis.<sup>8</sup> Ticks can become embedded in the meibomian gland orifice and manifest as a mass at the eyelid margin. Ticks are best removed as soon as possible, because the risk of disease transmission increases significantly after 24 hours of attachment. Animal and human studies have shown that the risk of disease transmission increases significantly after 24 hours of attachment and is even higher after more than 48 hours.<sup>9</sup>

Vector-borne zoonoses now occur in epidemic form on an almost annual basis, causing considerable morbidity and mortality.<sup>10</sup> The transmission depends on several factors, especially on the duration of the tick's presence in the host body and on whether the tick is infected or not.<sup>7</sup>

Infestations on eye by tick or tick like creatures (zoonosis) are very rarely seen, but they have very important mortality and morbidity risks. Personal prevention measures, such as reducing the amount of exposed skin, use of tick repellents on exposed skin or clothing are important but these preventions don't protect the eyes. Protective goggles may be considered to protect eyes of the people who live in rural areas with woods, bushes, high grass.

Holak et al.<sup>11</sup> reported that Lyme borreliosis was found in one out of five patients after tick infestation of the eyelid region. Experimental evidence suggests that chemical irritants are ineffective at forcing the ticks to detach and risk triggering injection of salivary fluids and possible transmission of disease-causing microorganisms. Application of petroleum jelly, fingernail polish, 70% isopropyl alcohol, or a hot match has failed to induce detachment of ticks.<sup>4</sup> Euro-surveillance recently reported that travellers who discover ticks attached to their body should remove the tick by grasping the mouthpiece with tweezers (forceps) and rotating the tick while withdrawing it. On the other hand, readers have pointed out that other guidelines, including those

of the World Health Organization and the United States Centers for Disease Control and Prevention do not advise rotating the tick during removal.<sup>4</sup> The use of a blunt, medium-tipped, angled forceps offers the best results. Following tick removal, the bite area should be inspected carefully for any retained mouthparts, which should be excised.<sup>9</sup> All methods aim for complete removal of tick parts from host tissue to prevent late complications or sequelae such as granuloma or inflammatory and infectious skin abscess formation.<sup>12</sup>

Kyasanur forest disease is main concern in Indian scenario. Main ocular features are redness, pain photophobia defective vision and headache. Laboratory diagnosis of the disease is established by molecular methods, while IgM and IgG antibodies become detectable by indirect immunofluorescence assay or ELISA after the fifth day.<sup>13, 14</sup>

Topical antibiotic was used at the site of infestation in this patient. However, systemic antibiotic use may be considered in patients who are deemed high-risk, in pregnant patients, and in patients living in areas endemic for tick-borne diseases.<sup>9</sup>

#### **IV. Conclusion**

In conclusion, eyelid infestation of ticks is a rare condition. The tick must be completely removed from the eyelid as soon as possible, as chances of disease transmission increases with time of infestation. Mechanical removal may be a quick, easy, safe and effective treatment for ticks located on the eyelids. Patient must be informed about sign and symptoms of tick related disease.

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