

Facial nerve palsy from intra-aural tick (*Ixodes holocyclus*) infestation

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ABSTRACT

Tick bite is common in Malaysia. It causes inflammation to the skin and to some extent its toxin release can cause local or systemic infiltration. Intra-aural tick infiltration is common. However presentation with facial nerve paralysis is rare. We report an interesting case of facial nerve paralysis secondary to intra-aural tick infestation and discuss the pathophysiology and theories of local neurological involvement and its management.

Keywords: Facial nerve, tick infestation, facial paralysis

INTRODUCTION

Tick infestation is common in Malaysia, especially in the urban areas. However, isolated facial nerve palsy from tick infestation is rare. Patient usually presents with severe earache. Patient may present with local irritation, allergic reaction or worse local paralysis. Local paralysis can occur as a result of envenomation. Manifestations depend on the stage of the tick (larva, nymph or adult). Several toxin fractions of various molecular size have been isolated from tick salivary glands. However, they all cause paralysis through blockage of neurotransmitter (acetylcholine) secretions at neuromuscular junction.

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CASE REPORT

A 64-year-old lady presented to the ORL clinic with sudden onset of asymmetry of face after waking up from sleep. She also complained of left earache for two days. On observation, she had grade III House-Brackmann Grading Facial nerve palsy (Figure 1a). On examination, both pinna were normal but mildly tender on the left pinna. Otoscopic examination of the left ear revealed a tick to be embedded along with blackish tick eggs (Figure 1b). The ear canal was inflamed and the tympanic membrane was dull. After cocaine infiltration into the left ear, the tick was removed without difficulty.

She was discharged with oral antibiotic, ear drops and analgesia. On review two weeks later, her left ear pain had resolved and facial nerve palsy improved to grade II.



Figs. 1: a) Left facial (cranial nerve VII) palsy at presentation, and b) Otoloscopic examination showing the tick and an egg (arrow).

Her left ear was mildly inflamed and the tympanic membrane was intact. Her nerve function normalised a week later (Figure 2).

DISCUSSION

Tick (ixodes) infestation is common in Malaysia but isolated facial nerve palsy caused by tick infestation is uncommon. Srivovianti and Ahmad reported that two out of 91 patients with intra-aural tick infestation developed

local facial nerve paralysis in their 12 months study.¹ Another study reported three cases of intra-aural tick with facial nerve palsy.²

The most important feature of tick envenomation is neuromuscular paralysis. In Australia, ixodes is responsible of paralysis in dogs, cats, sheep, calves, pigs, chicken and humans as well.³ Ticks survive well in humid conditions like in Malaysia. Dry conditions, relatively high temperatures (32 degree Celsius and above), or low temperatures (7 degree Celsius and below) are lethal for this animal.

Ticks are blood sucking arachnoids and attach to their hosts for feeding. It will burst with over-repletion.⁴ The female tick feeds on blood to gain nutrient for its eggs to mature. While sucking the host blood, it injects its toxins into the host to avoid over-repletion. This toxin is believed to cause failure of secretions of acetylcholine at the neuromuscular junctions. Clunies-Ross (1926-1935) in his study provided the definitive evidence that paralysis of tick infestation was



Fig. 2: Recovery of the facial nerve with residual palsy at follow up (one week later).

due to a toxin secreted by ticks and concluded that there was an abnormality of excitation-secretion mechanism possibly due to reduced of calcium availability.⁵ As a result, the muscle contraction-relaxation cycle is affected.

Indhudaran *et al.* proposed two theories for facial nerve paralysis associated with tick infestation depending on the tympanic membrane; perforated or intact. In those with perforated membrane, facial nerve paralysis is cause by direct injection of toxin into the middle ear and through a natural dehiscence of fallopian canal. In those with intact tympanic membrane, facial nerve is affected by extensive of inflammation process to the fallopian canal.⁶ We believe the second theory explains our case.

The peak of toxin release to the host is on the fifth or sixth day of infestation. Therefore, early removal of the tick is preferred. The main aim of management is to remove the tick from the ear. Once the tick is removed or dies, no further toxin will be released into the host stop infiltrating as the tick will stop sucking. The removal is either by manual extraction or chemical method. To remove the tick, it is advisable not to press on its body as it may cause further and more spillage of toxin into the host as tick mouthparts embedded in the skin.

The chemical removal method is debatable. Some clinicians like to apply methyl-ine spirit, cocaine, turpentine or oil to irritate the arachnids and make its drops its head from the host. However, some believe that the chemical may lead it to inject more toxins into the host.

As a conclusion, facial nerve is one of the possible complications of intra-aural tick infestation. The insect should be removed or kill to prevent further release of toxin. Good analgesic, local antibiotic or ear drops may improve the symptoms.

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