

## Intra-aural tick resulting in facial nerve paresis

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Rajinder S, Nik Adilah NO. Intra-aural tick resulting in facial nerve paresis. *Malays Fam Physician*. 2017;12(3);25–27.

### Keywords:

Tick, intra-aural, facial nerve paresis

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### Abstract

The presence of a tick in the ear is an uncommon problem encountered by the department of otorhinolaryngology. A tick infestation in the ear can be a traumatising experience for the patient. Here, we report a case of a woman who presented with left facial weakness due to the presence of a tick in the external auditory canal.

### Introduction

Ticks, which are most commonly found in the domestic animals, may present as a foreign body in the external auditory canal of the human ear. This infestation of the ear is also known as otoacariasis. Patients with this manifestation usually present to the accident and emergency department with otalgia. If left untreated, it can lead to ear infection, cranial nerve involvement and even mortality.<sup>1</sup>

### Case summary

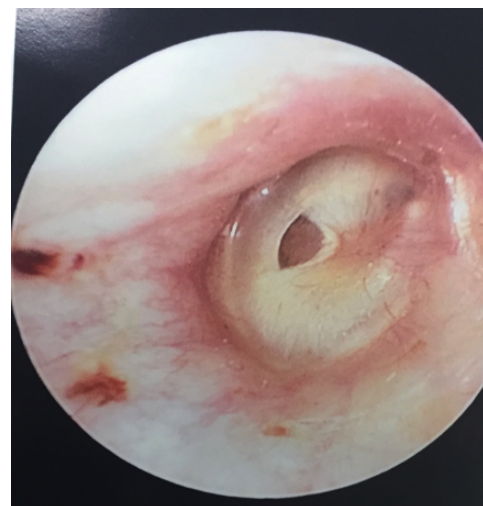


**Figure 1.** Left-sided facial nerve palsy

A 61-year-old lady was referred to the accident and emergency department with a history of left ear pain associated with foreign body sensation and left facial weakness for 4 days. She provided a history of contact with a cat the day before the onset of the symptoms. The pain was dull and aching without any ear discharge. Three days following the onset of otalgia, her daughter noticed that she was unable to close her left eye completely and

there was left facial asymmetry. There was no history of fever, vomiting, blurring of vision or reduced hearing.

While examining the patient, we noted that she was unable to close her left eye completely. There was loss of wrinkles over her left forehead, and the angle of her mouth was deviated towards the opposite side. The facial nerve palsy was graded as House–Brackmann grade II. On examination using an otoscope, the left external auditory canal was filled with cerumen, which was suctioned out carefully. Following removal of the cerumen, tick faeces were seen in the ear canal close to the tympanic membrane. A well-visualised tick was seen attached to the posterior superior quadrant of the tympanic membrane. The tympanic membrane appeared inflamed. The opposite ear was normal with an intact tympanic membrane. The ear was then examined using a microscope and the visualised tick was removed using a crocodile's forceps. A small perforation with minimal bleeding



**Figure 2.** Left tympanic membrane perforation after tick removal

was observed following removal of the tick. After a while, the bleeding subsided and the external auditory canal was rinsed thoroughly with normal saline.

The patient was given oral prednisolone 20 mg three times a day with a tapering dose for 2 weeks and ofloxacin 0.3% eardrops three times a day for a week. She was also advised to keep her ears dry. Four weeks after the treatment, her facial nerve weakness completely resolved with a healed tympanic membrane.

### Discussion

Removing a foreign object stuck in the ear is a common procedure encountered by the otolaryngologists. The foreign objects include beads, cotton buds, small parts of a toy and even insects of varying sizes and shapes. Their lodgement in the ear canal may cause some degree of discomfort and even unwanted complications. Domestic animals and pets are the natural environment for ticks and mites to live. These parasites may reside in humans when there is a direct contact of humans with these animals. There are many varieties and subspecies of ticks. They can be broadly classified into hard ticks (ixodidae) and soft ticks (argasidae). The difference between the hard tick and the soft tick is that the hard tick possesses a hard shield or scutum whereas the soft tick does not.<sup>2</sup> Foreign bodies in the ear involving ticks has been widely documented in countries such as India, Sri Lanka, Nepal, South Africa, Chile and Malaysia.<sup>3</sup> These blood sucking parasites feed from a wide variety of animals, especially mammals and birds. They are transmitted to humans through direct contact between humans and domestic pets. They can easily attach to body parts by using their hooked front legs.

The most common complication of tick manifestation is otalgia, which accounts for almost 90% of cases, followed by bleeding (10%), giddiness (5%), tinnitus (5%) and facial paresis (5%).<sup>3</sup> This condition occurs in all age groups.<sup>3</sup> Facial nerve paresis may occur due to the release of neurotoxin present in the tick's saliva. Usually, female ticks are the main culprit in secreting these neurotoxins.<sup>4</sup>

To date, there are many theories that explain the pathophysiology of localised facial nerve palsy caused by intra-aural tick infestation. Nager and Proctor stated that congenital

bony dehiscence in facial canal is seen in almost 55% of the temporal bones,<sup>5</sup> and the explanation given is that the tick saliva may invade the facial nerve resulting in paresis through this bony dehiscence. The presence of canal dehiscence is more commonly observed in the tympanic segment of the facial nerve.<sup>1</sup> This dehiscence provides a direct access to the tick toxins.<sup>1</sup> As the toxin reaches the facial nerve, it causes inflammation and oedema resulting in nerve paresis.<sup>1</sup>

Removing an intra-aural tick can be a painful experience for the patient especially in children. Removal of an intra-aural tick can be even more complicated when the ear canal is narrowed and swollen due to multiple attempts of removal by unskilled medical personnel as well as the bite of the tick itself causing injury.<sup>6</sup> Removal of the intra-aural tick should only be attempted if there are adequate facilities and in the presence of trained medical personnel.

There are several techniques by which an intra-aural tick can be removed. It can either be removed manually using a forceps or by applying a noxious stimulus, which allows the tick to fall off.<sup>6</sup> Preparations such as liquid paraffin and sodium bicarbonate are also used to aid tick removal. Using a blunt, medium tip angled forceps followed by an application of antiseptic solution is the ideal method to remove a tick.<sup>7</sup> Some literature suggested that by grasping the tick close to the skin surface while applying a gentle traction using a curved forceps or a tweezers safely releases the tick along with its mouthparts.<sup>1</sup> For uncooperative children, it is advisable to remove the tick under general anesthesia to reduce the burden of trauma and prevent further complications.

There are various options available for the treatment of facial nerve paresis. The use of corticosteroid therapy is the most preferred choice of treatment.<sup>8</sup> Oral corticosteroids are usually prescribed to lessen nerve inflammation hence preventing further damage. While the usage of corticosteroids for the treatment of Bell's palsy and herpes zoster oticus has been shown to be beneficial, its effectiveness in the treatment of tick-induced facial nerve paresis remains unproven. Oral prednisolone is usually given for 10 days with tapering doses beginning with 60 mg per day in divided doses.<sup>9</sup> This dosing regime

enhances the anti-inflammatory action while reducing its side effects.

### Conclusion

The presence of an intra-aural tick can be extremely painful and can result in facial

paralysis due to irritation of the nerve with tick toxin. Therefore, an urgent referral to the otolaryngologist is required. Careful visualisation and instrumentation by experienced health personnel are required to remove the tick safely.

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