

Aural gnathostomiasis*

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Human gnathostomiasis that involves the ear, mastoid cavity and facial nerve is a rare entity. We present a case of Gnathostoma spinigerum that caused intermittent left sided otalgia accompanied by deafness in a 48-year-old Thai female. The worm finally exited through the tympanic membrane. We also review the literature and remind the laryngologist in Asia to be aware of the possibility of infection in a patient complaining of otalgia.

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การติดเชื้อพยาธิตัวจี๊ดของหู กระตุกมาตลอด และ *facial nerve* นี้พบได้น้อยมาก ผู้รายงานนำเสนอ
ผู้ป่วยหญิงไทยอายุ 48 ปี ซึ่งมีอาการปวดหูข้างซ้ายเป็นครั้งคราว และหูข้างซ้ายหนวกพบว่าเกิดจากพยาธิตัวจี๊ด
และพบตัวพยาธิทะลุผ่านแก้วหูออกมา ผู้รายงานได้ค้นรายงานเก่าและอยากจะเตือนแพทย์หู คอ จมูกทั้งหลายให้
นึกถึงสาเหตุดังกล่าวในผู้ป่วยที่มีอาการปวดหูไว้ด้วย

Human gnathostomiasis is mainly caused by *Gnathostoma spingerum* (*G. siamense* - Livinsen 1980). Few cases were reported to be caused by *G. hispidum*. *Gnathostoma* infection and parasites are fairly common in Thailand, Japan, China, the Phillipines and other areas where raw and pickled fish are a part of the diet.⁽¹⁻²⁾

Aural gnathostomiasis is a very rare entity. Datta in 1930 described cutaneous gnathostomiasis involving the temporal muscle which resembled acute mastoiditis.⁽³⁾ Prasansuk and Hinchcliffe in 1975 reported a case of intracranial gnathostomiasis that migrated via facial canal into the middle ear and finally exited through the tympanic membrane.⁽⁴⁾ In 1977, Boongird et al also recorded the intracranial gnathostomiasis that produced facial nerve paralysis and swelling over the mastoid region.⁽⁵⁾ In 1985 the senior author of our group (A.C.) described a case of aural gnathostomiasis presenting with sudden otalgia in a Thai female patient.⁽⁶⁾ In that case, two *gnathostoma* larvae were found located between the epithelial and the fibrous layers of the tympanic membrane. Recently, an additional case was encountered and will be presented herein.

Report of a case

A 48-year-old Thai woman living in the rural area presented to the E.N.T. clinic with a complaint of a intermittent left-sided otalgia accompanied by deafness, serous otorrhea and tinnitus for one month duration. Vertigo was noted once in the last month and some dysequilibrium persisted till the time of examination. Past history revealed that the patient ate uncooked fish once in the past year. She also had the intermittent migratory swelling over the left temporal and periauricular rehions during the same period.

Physical examination revealed that the worm was stuck on the lower half of the tympanic membrane with its head penetrated through the perforation. There were some swelling, edema and granulation tissue reaction around that area. (Fig. 1) The worm was removed by alligator forceps and it was identified as an immature female of *Gnathostoma spinigerum* and measured 13.50×1.54 mm. (Fig. 2,3) After removal of the parasite, pulsatile serous discharge throught the perforation was observed.



Figure 1. Appearance of the tympanic membrane after removal of the parasite. There is a perforation (arrow head) at the tip of a localized swollen tympanic membrane.

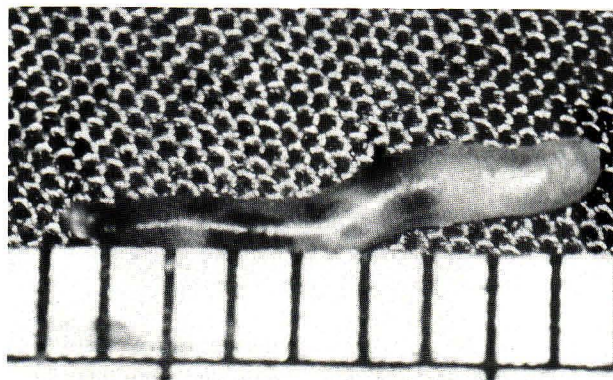


Figure 2. The parasite, immature female of *G. spineigerum* measured about 1.54×13.50 mm.

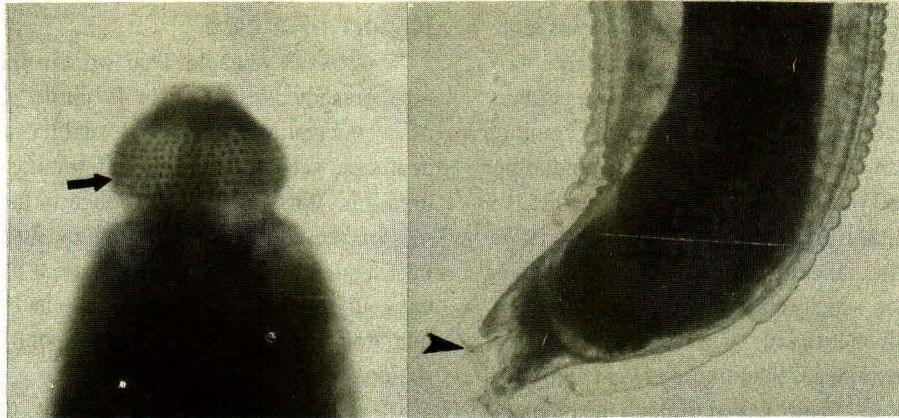


Figure 3. This picture shows the head of the parasite with 8 rows of cephalic hooklets (arrow) and the tail of the female parasite. (arrow head)

Laboratory investigations included the hemoglobin level of 11.0 gm/dl, white blood count 9300/mm³ with 56% neutrophils, 19% eosinophils and 25% lymphocytes. Skin test for *Gnathostoma spinigerum* was positive. The audiogram showed a total deafness of the left ear

and normal hearing on the other. The patient was followed up one week later and the tympanic membrane was completely healed but unfortunately the hearing did not return.

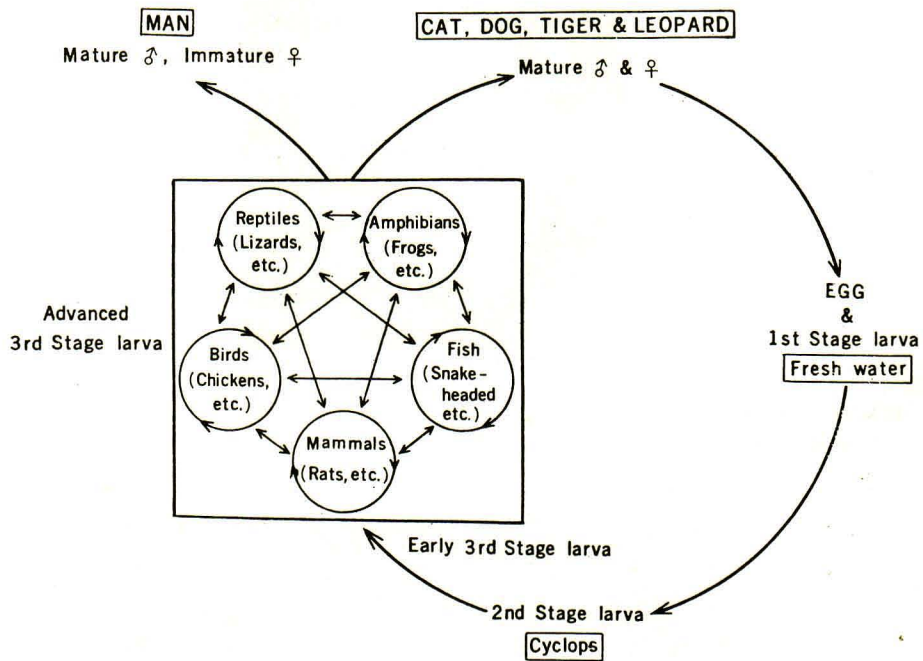


Figure 4. The life cycle of *Gnathostoma spinigerum* (after Daengswang).

Discussion

The life cycle of *G. spinigerum* involved the definitive host and two intermediate hosts⁽⁷⁾. (Fig. 4) Adult worms live coiled in the wall of the stomach of

the definitive hosts (tiger, cat and dog) and eggs are extruded from these lesions. The first intermediate host is the copepods in which the second stage larvae are formed. The second intermediate hosts are a number

of fresh-water fish, frogs, snakes and birds. The third-stage larvae are encysted in the flesh of these animals. Man is considered an accidental host and *Gnathostoma* infection is noted whenever he consumes inadequately heated flesh containing the encapsulated third-stage larvae. The larvae male or immature female. These adults and advanced third-stage larvae migrate throughout the body causing the characteristic migratory swelling or more deep visceral lesions in the abdomen, eyes and brain.

Gnathostomiasis is usually not considered as the cause of otalgia. Whenever the previous history of being in the endemic area, eating of the uncooked food with subsequent migratory swelling are noted, provisional diagnosis is made. Confirmation relies on the pertinent laboratory findings, those are eosinophilia, positive skin test for *Gnathostoma* and identification of the worm.⁽¹⁻²⁾ Based upon the above findings our cases were diagnosed as aural *gnathostomiasis*. The previous studied case revealed two worms located in their tracts between epithelium and fibrous layer of the tympanic membrane

and did not enter the middle ear.⁽⁶⁾ The worm in the present case was found protruding through the ear drum. Migration of the worm in this case may either pass through the fissure of Santorini or enter the eustachian tube into the middle ear and caused inner ear damage by way of toxic reaction or direct injury through the round window. Finally it exited through the tympanic membrane and created a perforation and granulation tissue which in turn developed otalgia and otorrhea.

Summary

We present an additional case of aural *gnathostomiasis* that caused otalgia. Immature female of *Gnathostoma spinigerum* was found sticking in the lower half of the tympanic membrane with its head protruding through the swollen, edematous tympanic membrane.

This case as well as our previous case study are presented to remind the Asian Otolaryngologists who live in the home of *Gnathostomas* to be aware of this possible entity when dealing with otalgia.

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