

A BRIEF REPORT ON *GNATHOSTOMA SPINIGERUM* SPECIMENS OBTAINED FROM HUMAN CASES

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INTRODUCTION

Gnathostomiasis has been reported to be prevalent in certain areas of Central Thailand and is a public health problem. During 1961-1963 as a result of report forms sent for clinical survey for gnathostomiasis throughout the country, about 900 of suspected cases were admitted to 92 provincial and Bangkok hospitals; 81% of hospitals in Central Thailand and 10% in Northeast. Man acquires the infection by consumption of raw or undercooked fresh-water fish, frogs and snakes containing infective third-stage encapsulated larvae. Domestic poultry may also be a source of human infection. Cats and dogs in Thailand are considered to be important reservoirs for spreading gnathostomiasis to man (Daengsvang, 1980). The infection is characterized by migratory swellings, subcutaneous larva migrans or abscesses which are usually peripheral but occasionally involve the eyes, lungs, abdomen or brain.

This study is a brief report of worms obtained from patients, sent to the Faculty of Tropical Medicine for species identification and confirmation of diagnosis.

MATERIALS AND METHODS

During a 16-year period (1968-1984), parasitological specimens sent to the Faculty of Tropical Medicine, Mahidol University, were examined for identification or confirmation of gnathostomiasis. A total of 23 gnathostome specimens were obtained from patients attending the Hospital for Tropical Diseases, other general hospitals and medical clinics in Bangkok, and provincial hospitals in

Central Thailand. Almost all the worms received were well preserved in either formalin or 70% ethanol solution. On receipt, the specimens with preservatives were immediately fixed in either above mentioned fixative for some days until studied. All specimens were then cleared by lactophenol and examined under usual light microscopy. Three different stages of *Gnathostoma spinigerum*; larva, immature and mature forms of various sizes were identified.

RESULTS

Five advanced third-stage larvae (22.01%) were obtained from the various parts of the body; one each from the skin of the elbow, hand, eyelid, mucous membrane of the mouth, and anterior chamber of the eye measuring; 2.20-3.50 mm length \times 0.40 - 0.63 mm width. The smallest was 2.20 \times 0.40 mm obtained from the mucous membrane of the mouth.

Fourteen immature worms (8 males and 6 females) with males measuring 4.63 - 9.35 mm length \times 0.60 - 1.05 mm width, and females 3.83 - 16.25 mm length \times 0.83 - 1.0 mm width; 12 worms had 8 cephalic-hooklet rows, while 2 had 6 rows and 7 rows. Of these 14 worms the smallest was an immature female measuring 3.83 \times 0.88 mm, with 8 rows of fully-developed cephalic-hooklets and the largest was also a female 16.25 \times 1.0 mm with 6 rows of cephalic-hooklets. The immature females showed more variations in size than the immature males.

Four mature males measuring 9.90 - 12.50 mm length \times 1.0 - 1.25 mm width, of which the smallest measuring 9.9 \times 1.0 mm was

removed from the abdominal skin of a 7-day old baby born from a highly suspected case of gnathostomiasis. The largest measuring 12.50 × 1.25 mm was surgically removed from a pelvic tumor.

DISCUSSION

One larva with 4 rows of cephalic-hooklets was found to be smaller, measuring 2.20 × 0.40 mm, than those previously reported from Thailand. It was obtained from the mucous membrane of the mouth. Chitchang *et al.*, (1981) reported a larva with 5 rows of cephalic-hooklets, with incomplete development of the 5th row. Daengsvang *et al.*, (1973) reported *G. spinigerum* larva measuring 6.0 × 0.5 mm surgically removed from the index finger of a 64-year old man, considered to be the largest larval stage found in man. Comparatively experimental studies on white mice, 29 encysted advanced third-stage larvae obtained from muscles, measured 2.8 - 5.2 mm × 0.3 - 0.8 mm (average 3.95 × 0.42 mm) (Daengsvang, 1980), and only one larva among many advanced third-stage larvae from a tree-shrew, showed 5 complete transverse rows of oblong cephalic-hooklets (Daengsvang *et al.*, 1966).

The above findings showed that *G. spinigerum* advanced third-stage larvae recovered from man and animals showed different size variations in development and occasionally the 5th cephalic-hooklet row is completely or incompletely developed with few hooklets.

The number of immature worms found were 3.5 times as many as the mature, and almost thrice as much as the larvae. In one case the size was 4.63 × 0.06 mm and spontaneously passed with the patient's urine. The worm was a little shorter than the larval stage reported from the index finger of the male patient (Daengsvang *et al.*, 1973). One immature worm showed 6 rows of complete cephalic-hooklets and another had 7 rows of

complete cephalic-hooklets. All immature worms varied greatly in size ranging from 3.83 to 16.25 mm in length and 0.60 to 1.05 mm in width. Immature worms from 9 patients (Prommas and Daengsvang, 1934) measured 4.20 - 9.36 mm × 0.34 - 0.85 mm while an immature female measured 17.0 × 1.0 mm (Chitchang *et al.*, 1981) from the abdominal skin. This indicates that the immature stage of *G. spinigerum* undergoes much variation in development in man.

All 4 mature male worms showed variation in measurements 9.9 × 1.0 mm to 12.5 - 1.25 mm, of which the smallest is much shorter than the immature female in this study, was removed from the abdominal skin of 7-day old baby. The case is prenatally transmitted from a highly suspected case of gnathostomiasis, infection acquired at about her 5th month of pregnancy. The largest mature worm of this study measured 12.5 × 1.25 mm which was surgically removed from a pelvic tumor.

SUMMARY

A total of 23 gnathostome specimens different stages from the Hospital for Tropical Diseases, other general hospitals and medical clinics in Bangkok metropolitan area and central Thailand were identified as *G. spinigerum*. The various stages were as follows:

Five advanced third-stage larvae (22.0%) of various sizes; 2.20 - 3.50 mm × 0.40 - 0.63 mm were removed from the skin, mucous membrane and the eyeball, of which the smallest measured 2.20 × 0.40 mm.

Fourteen immature worms of both sexes were from the skin and mucous membrane, one spontaneously voided in the urine. The sizes varied from 4.63 - 9.35 mm × 0.60 - 1.05 mm (8 male worms), and 3.83 - 16.25 mm. × 0.83 - 1.0 mm (6 female worms). All these immature worms had 8 rows of complete

cephalic-hooklets with the exception of two with 6 and 7 rows of complete cephalic-hooklets.

Four mature males size ranged from 9.9 - 12.5 mm × 1.0 - 1.25 mm. The smallest was removed from the abdominal skin of a newly born 7-day old baby evidently the case was prenatally transmitted.

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