
Cutaneous gnathostomiasis: Report of 6 cases with emphasis on histopathological demonstration of the larva

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Background: Cutaneous gnathostomiasis is an emerging food-borne parasitic zoonosis. Histopathological demonstration of the larva on random biopsy specimen of erythematous plaques is infrequent because of its migrating nature.

Objective: We sought to determine whether medical treatment with albendazole or ivermectin increases the diagnostic yield of skin biopsy specimen.

Methods: A retrospective chart review was conducted in a private dermatology practice in Lima, Peru. Cases with a clinical diagnosis of nodular migratory panniculitis and pathological diagnosis of eosinophilic panniculitis or gnathostomiasis were reviewed. Only cases with definitive diagnosis confirmed by histopathology or parasite isolation were included in the study.

Results: A definitive diagnosis of gnathostomiasis was rendered in 6 of 55 reviewed cases. Histopathological or gross identification of the nematode's larva was made obtaining a biopsy specimen of papules or pseudofuruncles that developed after oral antiparasitic treatment.

Limitations: This is a retrospective case series study and no serologic testing was available.

Conclusion: Biopsy of a papule or pseudofuruncle subsequent to oral treatment increases the likelihood of demonstrating the larva on skin biopsy specimen, which allows definitive diagnosis and may have therapeutic benefit. (*J Am Acad Dermatol* 2013;68:301-5.)

Key words: biopsy; eosinophilic; *Gnathostoma*; gnathostomiasis; migratory; panniculitis; treatment.

Once confined primarily to Southeast Asia, gnathostomiasis has now spread to the Americas, constituting an important health problem in Mexico, Ecuador, and Peru.¹⁻⁴ With increased travel and globalization, the disease has been detected at increasing rates in nonendemic areas such as Europe, Africa, Australia, and the United States.⁵⁻⁷ Because of the migrating nature of

the parasite, the elusive larva is rarely identified on skin biopsy specimens at initial presentation, with diagnostic and therapeutic implications. Although it has been suggested that medical treatment with albendazole stimulates outward migration of the larva, there are conflicting results in a limited number of studies.^{8,9} We report 6 cases of cutaneous gnathostomiasis in which the larva was either visualized

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Conflicts of interest: None declared.

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on skin biopsy specimen or directly isolated from the skin after initial treatment with albendazole or ivermectin, and review the literature with emphasis on how to identify the larva on skin biopsy specimen.

METHODS

This study was performed according to an institutional review board–approved protocol. A retrospective chart review was conducted in a private dermatology practice in Lima, Peru. Cases with a clinical diagnosis of nodular migratory panniculitis and pathological diagnosis of eosinophilic panniculitis or gnathostomiasis were reviewed. Only cases with definitive diagnosis confirmed by histopathology or parasite isolation were included in the study. Age, gender, mode of acquisition, treatment, time from medical treatment to histopathologic diagnosis, follow-up period, and outcome were recorded for all patients. Histopathological diagnosis was confirmed by reviewing hematoxylin-eosin sections showing a cross section of third-stage larva, or by identification of the whole larva after extrusion from the skin. For 1 case (patient 2), the recovered intact third-stage larva was included in paraffin after identification and serially sectioned in entirety in transverse fashion to look for diagnostic features at different anatomic levels.¹⁰

RESULTS

All, 55 patients were given the diagnosis of eosinophilic panniculitis compatible with gnathostomiasis based on clinical presentation, dietary history, and histologic findings. A definitive diagnosis of gnathostomiasis was rendered in 6 cases (11%). In 4 of these cases, the diagnosis was confirmed after identification of third-stage larvae on skin biopsy specimen. For the other 2 cases, the diagnosis was confirmed after positive identification of whole late-stage larva recovered from pustules. In the remaining 49 cases, only a presumptive diagnosis of gnathostomiasis could be rendered based on history, clinical examination, and eosinophilic infiltrates on skin biopsy specimen. Of note, in 5 of 6 cases, an initial biopsy specimen before medical treatment showed eosinophilic panniculitis but no section of the larva. In 4 of these cases, a second skin punch biopsy

specimen obtained from a papule or pseudofuruncle that developed after treatment with oral albendazole or ivermectin showed a cross section of third-stage larva of *Gnathostoma* species, allowing for definitive diagnosis and treatment (Fig 1). In 1 case, an intact larva consistent with *Gnathostoma* species was recovered by the physician upon physical examination

of a pustule, which also developed after oral treatment. In the other case, the patient recovered the larva after noticing it coming out of a pustule and brought it to the clinic for identification (after 10 weeks of oral treatment). This last case was not biopsied before initiation of treatment, as detailed below. Identification of the nematode's larva on these 2 latter cases was made based on criteria of larval intestinal cells or by counting the rows of hooklets in the cephalic bulb, as appropriate.^{10,11} Table 1 shows a

CAPSULE SUMMARY

- Gnathostomiasis is a parasitic infestation difficult to confirm on random skin biopsy specimen because of the migratory nature of the larva.
- Prescribing oral treatment may stimulate development of a papule or pseudofuruncle containing the larva.
- Biopsy of a papule or pseudo furuncle subsequent to oral treatment increases the likelihood of demonstrating the larva on skin biopsy specimen, which allows definitive diagnosis and may have therapeutic benefit.

summary of demographic and clinical data from patients with definitive diagnosis of gnathostomiasis; 2 representative histories are detailed below. The recovered intact larva subsequently processed for light microscopic examination (case 2) measured 2.15 mm from cephalic bulb to caudal end and close examination revealed 4 rows of transverse hooklets. Hematoxylin-eosin–stained sections examined at anatomic landmarks as described by Sirikulchayanonta and Viriyavejakul¹⁰ showed a central esophagus and cervical sacs at the upper cervical level, intestine and reproductive organ at mid-body level, and intestine and lateral chords at the caudal end. The average number of nuclei of intestinal cells was approximately 3 per cell. Collectively, these findings are most consistent with the third larval stage of *Gnathostoma* species (Fig 2).¹⁰⁻¹⁴

REPRESENTATIVE CASE HISTORIES

Case 1

A 39-year-old man presented with a 1-month history of migratory, red, tender nodules that migrated on his face, from the center of the forehead to the right supraorbital region (Fig 1). The patient regularly ingested raw fish marinated in lime juice (ceviche). An initial 3-mm punch biopsy specimen from the center of his forehead was taken, which showed an interstitial inflammatory infiltrate rich in

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