

Creeping Eruption Due to *Gnathostoma Spinigerum* in a Taiwanese Patient

HERMANN PINKUS, M.D., JULIN FAN, M.D., AND DOMINIC DEGIUSTI, PH.D.

From the Departments of Dermatology and Syphilology and Comparative Medicine, Wayne State University, College of Medicine, Detroit, Michigan

In March 1975, J.F. was consulted by a 45-year-old Chinese man because of a pruritic eruption on his back. The patient reported that he had been traveling in the southern, tropical part of Taiwan when he developed an itchy sensation on his back. The pruritus persisted, and he observed red streaks in the involved region. The eruption persisted for about two weeks before he saw a physician.

On examination, there was an erythematous linear and slightly infiltrated eruption between and below the scapulae. It was 2-3-mm wide and almost encircled an area 7 by 8 cm in size, in an irregular serpiginous fashion (Fig. 1). What appeared to be the oldest portion was slightly pigmented. The lesion became brighter red in color along its course and ended in two tiny papules, each the size of a pinhead (approx 1 mm).

A provisional diagnosis of creeping eruption due to worm infestation was made and a course of diethylcarbamazine

citrate, 50 mg, tid, was prescribed. At the same time, the fresh end of the lesion, including the two papules, was excised using local anesthesia because creeping eruption of the type common in America is very rare in Taiwan according to J.F.'s experience, and he wished to have histologic corroboration.

The patient returned two days later and reported cessation of pruritus. The streak had not extended, and it gradually disappeared during the following weeks. A more detailed history was obtained after the report of the tissue examination had been received. The patient admitted that he had eaten freshwater fish during his travels in rural areas of Taiwan, but he was not aware that any of the fish had been insufficiently cooked. The patient could identify the fish he had eaten as *Opicephalus argus*.

The excised piece of skin, fixed in formalin, was sent to H.P. for histologic examination. It was approximately 15 by 8 mm. It was embedded in paraffin in toto, and serial 10- μ m sections were cut through the small diameter from end to end. Sections were stained with hematoxylin and eosin, acid, orcein and Giemsa, and PAS and hematoxylin. Parts of a worm of very striking appearance were seen in some sections, and the organism was identified by D.D. as belonging to the genus *Gnathostoma*, and representing, most likely, *G. spinigerum*, which is encountered on the East Asian mainland in Japan and also in Taiwan.¹

Figures 2 and 3 illustrate the head bulb of the worm found in our sections. Low power (Fig. 2) discloses the

Presented at the Fourth Congress of the International Society of Tropical Dermatology, New Orleans, LA, September 27, 1979.

Address for reprints: Hermann Pinkus, M.D., P.O. Box 360, Monroe, MI 48161.

mouthparts and four rows of spines on the head bulb, which are typical of the second- and third-stage larvae. Figures 3A and B are two high-power views taken at different focal planes. They show the four rows of spines, with the lowest having more spines than that close to the mouth.

Gnathostoma spinigerum has many animal hosts, especially dogs and cats. The eggs are discharged in the feces, and the first- and second-stage larvae develop in copepods. These are eaten by fish. In *Opicephalus argus*, a common host, third-stage larvae develop in muscle. Insufficiently cooked fish can lead to human infection, and man can become the definitive host. The adult worms measure up to 5 cm in length; the larvae, a few millimeters. They are usually found in subcutaneous tissue, but may go to the lung and other organs, including the brain. Death may ensue.

Our patient was indeed fortunate in two respects. He seemed to have acquired only one worm, excision of which resulted in cure, and the worm had chosen the dermis as its site, which, according to Little,² is a relatively rare occurrence. Deep subcutaneous infestation is the rule. Our patient's case is probably the first case reported from Taiwan.



FIG. 1. Serpiginous erythematous border encircling area of back skin. The two dark irregular spots are scratch marks.

The identification of the larva of *G. spinigerum* is based on the finding of four definite rows of spines on the head bulb, and the fact that the lowest row has more spines than the first. This, according to Miyazaki,³ differentiates *G. spinigerum* from *Gnathostoma doloresi*. The

FIG. 2. Low-power photo of head bulb of *Gnathostoma* in tissue section. The black structures are elastic fibers. Orcein-Giemsa stain.



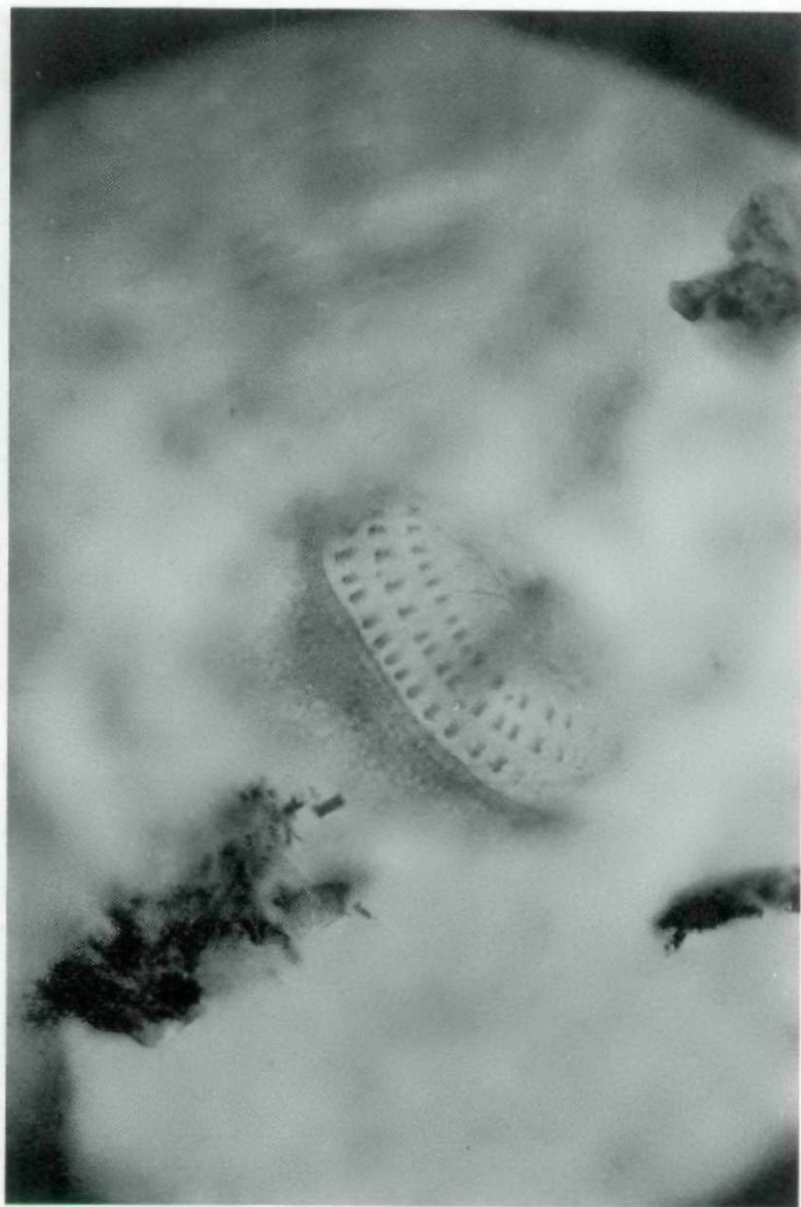


FIG. 3A. High-power photo of head bulb. Focused on the upper three rows of spines.

identity of the primary host remains in doubt. *Gnathostoma spinigerum* is mainly found in cats, and *G. doloresi* in swine. The intermediate host of both, however, is fish, among which *Opicephalus argus* is prominent.

The incubation period in man is three to four weeks, during which time the larva lives in the liver. It then

emerges into the subcutaneous tissue, but in our patient, it migrated into the upper dermis. The cure is by excision, as was practiced in our case. The few doses of diethylcarbamazine citrate probably had little effect. The patient has remained well.



FIG. 3B. Focused on the lowest fourth row of spines, which contains more elements than the first row and identifies *G. spinigerum*.

Drug Name

diethylcarbamazine citrate: Hetrazan

References

1. Spencer H: Tropical Pathology. New York, Springer-Verlag, 1973
2. Little MD: Larva migrans. In: Clinical Dermatology (vol 4 sect 18-16). Edited by Demis J, Dobson R, McGuire J. Hagerstown, MD, Harper and Row, 1979
3. Miyazaki I: On the genus *Gnathostoma* and human gnathostomiasis; with special reference to Japan. *Exper Pathol* 9:338, 1960

This document is a scanned copy of a printed document. No warranty is given about the accuracy of the copy. Users should refer to the original published version of the material.