

A SECOND CASE OF A HAIRWORM (GORDIACEA) "PARASITIC" IN MAN IN MALAYA

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CASE REPORT

A Chinese (Cantonese) child 3 years old, passed per anum two worms measuring 6 cms. and 16 cms. at the Johore Bahru General Hospital, Johore. The child had been admitted to hospital presumably for treatment of some illness. No further details are available to us.

We received only the smaller specimen for examination and it was found to be a hairworm (*Gordiacea*) belonging to the genus *Chordodes*. (Figs. 1-4). Specific diagnosis was not attempted as there are few records of gordiids from this region and in general, specific determination is difficult in this group without comparative material.

COMMENTS

Sandosham (1953) reported a case of a hairworm (*Gordius sp.*) passed per anum by a patient at the Kampar Hospital, Perak, thus adding the first case from Asia to twenty-three recorded at that time in other parts of the world. The present record is an additional one from Malaya. It is interesting to note that the hairworm recorded here belongs to a different genus from that recorded by Sandosham in 1953. Both these genera have been recorded in Malaya previously by Shipley (1903).

DISCUSSION

Many cases of hairworms "parasitic" in man have been reported. (Stiles 1907; Baylis 1927; Reardon 1928; Sayad, Johnson and Faust 1936; Baylis 1943 and Yeh and Jordan 1957). In most of these cases the worms were passed per anum or vomited out. In a few cases they were supposed to have been passed per vaginum (Baylis 1936). Carvahlo (1942) records a case where a hairworm was passed out through the urethra with the accompaniment of severe pain. The patient had previously complained of pain in the inguinal region. Sayad, Johnson and Faust (1936) recorded a particularly interesting case where the hairworm had encysted in the vicinity of the eye making surgical removal necessary.

The infection of humans with hairworms can best be understood if we consider the sites of infection in man and the life-history of the hairworm. They have been recorded from tissue and in the alimentary and excretory systems. The normal life cycle of hairworms is as follows: The adult is aquatic and freelifing and the female lays eggs in streams and ponds. The larvae which hatch out develop further, in a variety of animals but mainly in insects (both terrestrial and aquatic). Filipjev and Schuurmans Stekhoven (1941) state that the larvae may penetrate soft bodied animals (Snails, Man!); be ingested by insect or encyst on vegetation where they are taken up by both terrestrial and aquatic animals. It then undergoes development within the body of the host until it becomes an adult when it escapes into an aquatic environment. At no stage of its life history, does it take food through its alimentary canal. It absorbs food in its larval stage and does not feed as an adult. It does not produce eggs during its parasitic existence making diagnosis of parasitism by the gordiid worms more difficult.

Man can be infected from two sources. He may take the larvae in with drinking water or more rarely with aquatic vegetation. In this case the larvae would migrate into the tissues and there undergo development. This seems to have been clearly the case in Sayad, Johnson and Faust's record (1936). It is also suggested by the case history given by Carvahlo (1942). In the other cases too, this mode of infection is possible because the larvae on attaining the adult condition would move naturally into the body and are likely to appear in the faeces and urine. If this is the normal type of infection, the gordian worms are remarkable for adaptability because they can develop in insect or human tissue.

The second possible source of human infection are adult or developmental stages already in a host. It is well-known that the local inhabitants sometimes consume the large water beetle (*Cypister tripunctatus* Ol.) and the giant Water bug (*Lethocerus indicus* Lep. et. Serv.). Stick



Fig. 1. Hairworm (*Chordodes* sp.)
passed per anum by child.

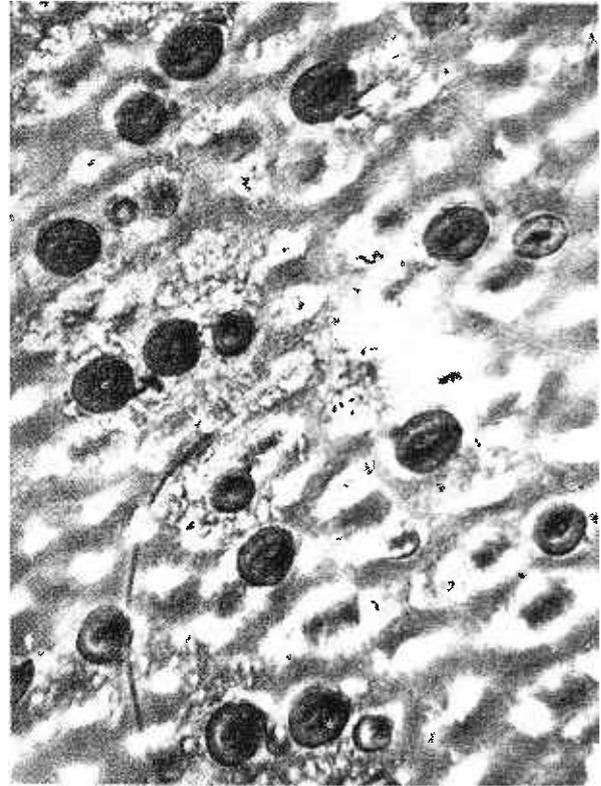


Fig. 3. Surface view of hairworm showing pattern
of minute warts (areoles).

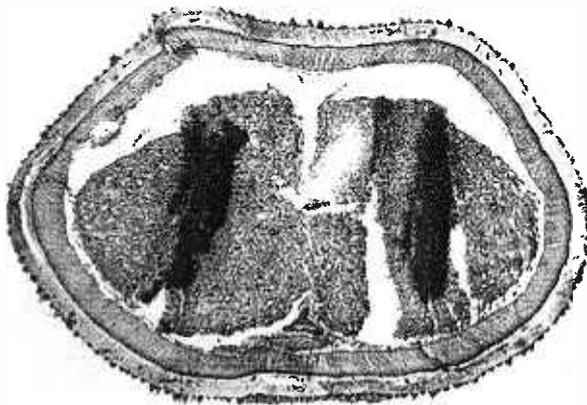


Fig. 2. Transverse section of hairworm to show
internal structure.



Fig. 4. Portion of body wall magnified
to show details of areoles in side view.

insects, or parts of them are sometimes consumed for medicinal purposes and cockroaches are said to be considered a delicacy by some. Also children may consume insects for no particular reason like health or taste. Under these circumstances the hairworms might be eaten but this is less likely than the previous possibility. It is perhaps worth mentioning that many of the cases recorded were in children.

The chances of an adult hairworm being consumed unnoticed or taken in drinking water must be considered very unlikely indeed because of its large size.

It is perhaps worth noting that hairworms are quite common in streams and ponds in Malaya. The authors have examined specimens from Ulu Langat, Selangor, Jasin, Malacca and Kahang, Johore. They belong to the genera *Gordius*, *Chordodes* and *Paragordius*. All except one of them were collected during the last ten months.

SUMMARY

A second case of a gordian worm (hairworm) "parasitic" in man is recorded from Malaya.

A previous literature is critically discussed especially in regard to the mode of human infection. It is suggested that water-borne larvae reach the gut, invade the tissues and are finally voided with the faeces or passed with urine. Other modes of infection are considered less likely by the authors.

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REFERENCES

- Baylis, H.A., (1927) — Notes on two gordiids and a mermitid said to have been parasitic in man. *Trans. R. Soc. Trop. Med. Hyg.* 21, 203-206.
- Baylis, H.A., (1943) — Notes on the distribution of hairworms (Nematomorpha: Gordiidae) in the British Isles. *Proc. Zool. Soc. Lond.* 113 (B), 193-197.
- Carvahlo, J.C.M., (1942) — Studies on some Gordiacea of North and South America. *J. Parasit.*, 28, 213-222.
- Filipjev, I.N. and Schuurmans Stekhoven, J.H., (1941) — A manual of Agricultural Helminthology. E.J. Brill, Leiden.
- Reardon, L., (1928) — A doubtful case of *Gordius aquaticus* in an infant.
- Sandosham, A.A., (1953) — Malaysian parasites XV. Seven new worms from miscellaneous hosts. *Stud. Inst. Med. Res. Malaya*, No. 26, 212-226.
- Sayad, W.Y., Johnson, W.M. and Faust, E.C., (1936) — Human parasitization with *Gordius robustus*. *J. Amer. Med. Assn.* 106, 461-462.
- Shiple, A.E. (1903) — On the ento-parasites collected by the Skeat Expedition to Lower Siam and the Malay Peninsula in the year 1899-1900. *Proc. Zool. Soc. Lond.*, 2, 145-156.
- Stiles, C.W., (1907) — Three New American Cases of infection of Man with Horse-hair worms (species *Paragordius varius*) with Summary of all Cases reported to date. *U.S. Pub. Hlth. Mar-Hosp. Serv., Hygienic Lab. Bull.* 34, 53.
- Yeh, L.S. and Jordan, P., (1957) — On a new gordiid worm. *Pseudogordius tanganyikae* gen. et. sp. nov. parasitic in man. *Ann. Trop. Med. Parasit.*, 51, 313-316.