
Case Reports

Echinostoma Ilocanum Infection

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Infection with *Echinostoma* species are not commonly found in India, although it has been reported from other South-East Asian Countries. Only one case of infection with *Echinostoma malayanum* in an adult has been reported from Calcutta, India(1). Here we present the first case report of infection with *Echinostoma ilocanum* in an Indian girl.

Case Report

An eight year old girl presented to the hospital with chief complaints of vomiting, diarrhea and swelling of the feet for seven days. The examination revealed a normally nourished child with mild pallor and pedal edema. Cardiovascular and respiratory systems examination was normal. There was mild distension of abdomen. The liver was enlarged 2 cm below costal margin, non tender with smooth surface. After few hours of admission, the child had vomiting which contained small, reddish grey leaf-

like worms. On close examination, they were small, few millimeters in size, showing a characteristic movement of extension and flexion similar to that of a leaf curling on itself and opening up. The worms were sent to the laboratory for identification.

After taking detailed history, we found that the patient was a migrant from a village in Bihar. She was residing in the vicinity of a pond and gave a history of contact with dogs and cats. She was nonvegetarian and reported consuming roasted fish and snails.

The hemoglobin and serum albumin values were 9.8 g/dl and 3.0 g/dl, respectively. Other investigations including urine examination, liver and kidney function tests, serum electrolytes and abdominal and chest X-rays were within normal limits. Ultrasonography of abdomen revealed enlargement of liver with normal echotexture and thickened gall bladder wall which, after treatment, was normal.

On macroscopic examination, the worms were dorsoventrally flat measuring 6 mm in length, 2 mm in breadth and 1.5 mm in thickness. Under light microscope, at the anterior end, an oral sucker surrounded by a circumoral disc, surmounted with a crown of 49-51 spines was seen (Fig. 1 B,C,D). The ventral sucker was seen in anterior fifth of the body. Below this the uterine coils filled with operculated eggs were seen followed by two deeply lobed testes and an ovary. Vitellaria could be visualized laterally on posterior three fourth of the body. Scanning Electron Microscopy (Fig. 1 A,B) of the adult worm was done to study the number and arrangement of spines, specific of the species. The body of

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adult worm was curved ventrally at the anterior end after preservation in 10% formalin. One third of the body was covered with spines dorsoventrally (Fig. 1A). The oral sucker was surrounded by 51 spines, arranged as described for *E. ilocanum*(2).

Three consecutive stool examinations revealed large operculated spineless eggs measuring $96 \mu\text{m} \times 70 \mu\text{m}$ (fig. 1E). These slides were kept moist chamber and when reviewed after two weeks, showed development of miracidium within the egg

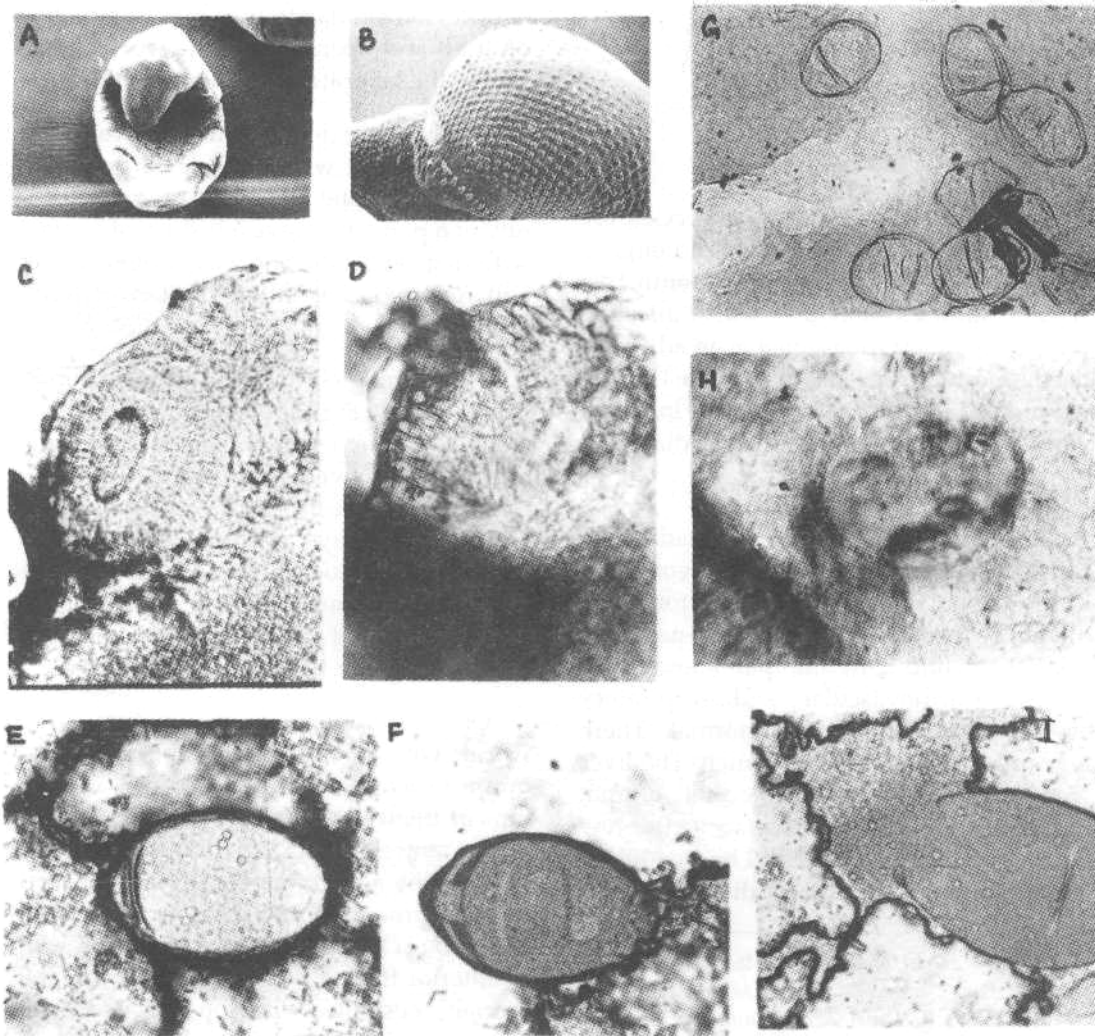


Fig. 1. (A) Scanning Electron Micrograph (SEM) of adult worm of *E. ilocanum*; (B) SEM showing the body spines and a crown of spines around the oral sucker; (C) Oral sucker surrounded by oral disc surmounted by a crown of spines (15×40); (D) Crown of spines (15×40); (E) Operculated egg of *E. ilocanum* (15×40); (F) Developing miracidium within the egg (15×40); (G) Eggs in utero (15×10); (H) Ventral sucker (15×40); (I) Miracidium escaping from egg after 15 days in the preserved wet mount (15×40).

(Fig. 1F). With these morphological characters of egg and adult worm, the parasite was classified in class *Trematoda*, Superfamily *Echinostomatoidea*, Family *Echinostomatidae*, Genus *Echinostoma* and species *Echinostoma ilocanum*(2).

The patient was treated with tablet Albendazole 400 mg initially. She passed dead worms in stool but she kept on passing eggs in the stool even after 15 days of treatment. Subsequently, the patient was treated with Praziquantal (40 mg/kg single dose), the drug of choice for *Echinostoma* infection. Stool examination after two weeks did not show any eggs.

Discussion

Echinostomiasis, a zoonotic disease is caused by intestinal fluke *Echinostoma* which belongs to family Echinostomatidae. This family includes 400 species of intestinal flukes classified in 40 genera. *Echinostoma* usually infects birds and mammals and only 23 species are known to cause infections in man(3). Mild infections due to this parasite in humans are of little importance but heavy infection may cause gastrointestinal symptoms(4).

Echinostomiasis is distributed world wide but most frequently seen in South-East Asian countries due to their food habits. A study from Seoul Paik Hospital, Korea reported egg positivity rate of *Echinostoma* sp. to be 0.03%(5). An epidemiological survey from Korea in 169 inhabitants and 473 junior high school students revealed 3 (0.5%) positive cases of Echinostomiasis(6). In another study from North Eastern Thailand, in post treatment fecal examination showed *E. malayanum* (8.3%), *E. ilocanum* (8.1%) and *E. revolutum* (0.8%)(7). A study from Thailand showed 18% positive stool samples, infected with one or more parasites of which 0.1% were *Echinostoma* species(8).

Relevant literature search revealed only one case report from India in 1993 of infection with *E. malayanum* in a tribal community near Calcutta. Two persons presented with chronic recurrent diarrhea with slight abdominal pain, indigestion and flatulence. Stool examination of these patients revealed *E. malayanum*(1). However, Leiper in 1911 reported for the first time, human infection with *E. malayanum* in laborers of Indian origin in Malaysia(9). *Echinostoma* is found in pigs and rats; however, intermediate hosts like *Pila*, *Belamyia*, *Lymnaea*, *Indoplanorbis* and *G. prasadi* are reported in India(1,2).

The present case is the first reported case of *Echinostoma ilocanum* in a child from India. The patient had heavy infection leading to gastrointestinal symptoms and hypoproteiniemia so far not reported with echinostomiasis. Generally mild and non-specific symptoms have been reported with the infection.

In the present case the parasite was identified as *E. ilocanum*, whose adult worm resembles in its morphology to the adult worm of *Clonorchis sinensis* and *Opisthorchis felinus*, but the latter could be differentiated on the basis of their small egg size (25-35 μm x 8-12 μm). The eggs of *Echinostoma* resemble the eggs of *Fasciola hepatica* and *Fasciolopsis buski* in shape, color and contents but they measure only 83-120 μm x 58-90 μm in size, in comparison to eggs of *F. hepatica* and *F. buski* which measure 125-145 μm x 70-90 μm . The adult forms of *F. hepatica* and *F. buski* can be easily differentiated from *Echinostoma*(10).

Various genera within the family Echinostomatidae were differentiated from each other, based on the morphological characteristics of adult worm, the eggs being almost similar like *Himasthla muchlensis* and *Paryphostomum sufrartyfex*.

The life cycle of this parasite has intermediate and definitive hosts. The patient was consuming roasted snails and fish which are probably the intermediate hosts and she used to play with dogs, cats and pigs which are the definitive host of the parasite. The other family members of patients could not be examined and investigated as they were residing in Bihar. An epidemiological survey is required to know the prevalence of infection with echinostomiasis in that geographical area and community.

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