

Case report

**THE FIRST CASE OF MONILIFORMIS MONILIFORMIS (ACANTHOCEPHALA) INFECTION IN UZBEKISTAN**

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**ABSTRACT**

Only a few cases of *Moniliformis moniliformis* infection have been reported in humans worldwide. In this paper, we report a case of infection with *M. moniliformis*, which passed in the stool of a 16-month-old boy in Uzbekistan. patient had abdominal pain, nausea, and one episode of vomiting. The child's mother reported that she often saw insects in the house, particularly cockroaches, and that the child might have swallowed beetles or cockroaches because he often took various small objects in his mouth. In a stool examination, eggs of *M. moniliformis* were not found. The patient was treated with albendazole, and the clinical symptoms reduced within 2 weeks. A stool sample contained an adult parasite with a length of 165 mm and a diameter of 2.0-2.5 mm; based on the size, this worm was likely a female. The parasite was white in colour, and it had a segmented appearance because of indented horizontal lines on the surface of its body. No cases of *M. moniliformis* infection have previously been reported in Uzbekistan. This is the 1<sup>st</sup> case of *M. moniliformis* infection in Uzbekistan.

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**1. Introduction**

Infection with *Moniliformis moniliformis*, a helminth of the phylum Acanthocephala (spiny- or thorny-headed worms), is known as moniliformosis. The main source of infection is animals, specifically rodents, which are the definitive hosts of the parasite; insects (beetles and cockroaches) are intermediate hosts [1]. *Moniliformis moniliformis* very rarely colonizes humans. Human infection occurs through accidental ingestion of beetles or cockroaches [1, 2].

Authors from Iran, Iraq, Nigeria, USA, Australia, Rhodesia and Saudi Arabia have published cases of humans (mostly children) affected by this parasite. In these reports, the clinical symptoms of parasitosis include the following: decreased appetite or anorexia, weight loss, abdominal pain, diarrhoea, fever, general weakness, vomiting, irritability, and pallor. However, some patients did not report any complaints. The diagnosis was made on the basis of macroscopic observation of an adult parasite and the detection of *M. moniliformis* eggs on microscopic examination of faeces [2-9].

In this paper, we report an infection in a young boy from the Rishton district in the Fergana region of Uzbekistan, who had a history of taking various small objects in his mouth (hence, potentially swallowing beetles or cockroaches) and passed a female *M. moniliformis* worm in his stool.

**2. Case report**

The patient was a 16-month-old child living in the Rishton district of the Fergana region, Uzbekistan. The first symptoms of the disease appeared on 28.09.2020. The disease began with the following symptoms: abdominal pain, nausea, and isolated instances of vomiting. By the evening of that day, the patient passed a 180-mm-long worm in his stool. The patient's mother thought that it might be a piece of some inanimate material and did not pay much attention to it. After 10 days, the mother found another worm of exactly the same type in the baby's diaper. The length of the worm was 150 mm. In the next 12 days, another 3 worms (ranging from 70 mm to 160 mm in length) were passed in the stool.

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On October 25, 2020, the patient presented to a health care centre with abdominal pain, nausea, and isolated instances of vomiting. During parasitological examination, no worm eggs were found. That evening, another worm passed in the stool. On October 26, 2020, the patient's parents came to the Fergana Regional Department of Sanitary and Epidemiological Welfare and Public Health Center to seek a parasitological examination for the child.

During the physical examination, the patient had abdominal pain, decreased appetite and sometimes vomiting. The general condition of the child was satisfactory, and he was active. General blood tests yielded the following results: haemoglobin – 112 g/l, erythrocytes –  $4.1 \times 10^{12}/l$ , leukocytes –  $6.7 \times 10^9/l$ , eosinophils – 6%, ESR – 8 mm/h. Regarding epidemiological risk factors, the family had a dog living in their garden. The patient's mother often saw insects in the house, particularly cockroaches, and the child was considered likely to swallow beetles or cockroaches because he often took various small objects in his mouth.

At the macroscopic examination, an adult parasite with a length of 165 mm and a diameter of 2.0-2.5 mm was recovered from the patient's stool; based on its size, this worm was likely a female. The parasite was white in colour, and it had a segmented appearance because of indented horizontal lines on the surface of its body (Figure 1).

Microscopic inspection of the patient's stool did not find the eggs of the parasite. However, laboratory technicians microscopically examined the parasite itself and observed eggs inside (Figure 2).

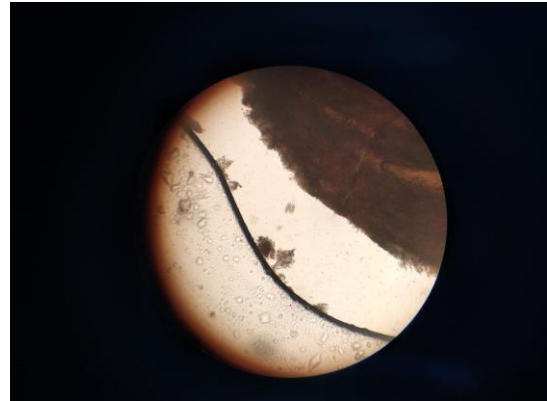
After macroscopic and microscopic examination of the worm, as well as a review of the epidemiological data, the patient was diagnosed with moniliformosis.

The patient received albendazole (200 mg) once daily for 3 days. On the first day of treatment, one 100-mm-long worm was passed in the stool. On the second day, the child passed two worms, measuring 18 and 20 cm in length. On the third day, the patient did not pass any additional worms. After treatment, the child's condition improved, his abdominal pains disappeared, and his appetite returned to normal.

Coproscopy was performed twice more (after 4 and 6 weeks) and was negative for eggs; no additional worms were passed in the stool.



**Figure 1. Macroscopic view of adult parasite (*M. moniliformis*).**



**Figure 2. *M. moniliformis* eggs inside the parasite**

### 3. Discussion

This case is Uzbekistan's first and only reported infection with the parasite *M. moniliformis*. Around the world, only a few cases of infection with this type of worm have been reported. Most of the patients in these cases were children [4-6, 8, 9]. However, an author from Nigeria reported that an adult had been infected with this worm [7].

The analysed sources showed that moniliformosis is associated with the accidental ingestion of insects such as beetles and cockroaches [8, 9]. In our case, according to the patient's mother, the child could have swallowed a beetle or cockroach, since such insects were often seen in the house.

An analysis of the literature shows that the main symptoms of parasitosis are abdominal pain, vomiting, weight loss, diarrhoea mixed with mucus, fatigue, fever, decrease or total loss of appetite, pallor of the skin, rumbling around the navel, and delayed development of children [1-9].

Treatment with various antiparasitic drugs including pyrantel pamoate, extract of aspidium, mebendazole, and niclosamide produces variable results [2-9]. In our case, the patient was treated with the drug albendazole, and a good therapeutic effect was achieved.

### 4. Conclusions

This case is the first case of human infection with the *M. moniliformis* parasite in Uzbekistan. The patient may have become infected with this worm by swallowing beetles or cockroaches infected with *M. moniliformis* larvae. Improving sanitation in the home environment could be an important preventive method. This type of parasitosis should be differentiated from ascariasis.

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