

Case Report

A case of albendazole and niclosamide resistant *Taenia saginata* infection

Aroop Mohanty*, T. Shantikumar Singh, Tshering Ongmu Bhutia,
Pratima Gupta, Priyanka Gupta

Department of Microbiology, AIIMS, Rishikesh, Uttarakhand, India

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*Correspondence:

Dr. Aroop Mohanty,

E-mail: aroopmohanty7785@yahoo.com

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ABSTRACT

Taenia saginata infection is an important food-borne parasitic zoonosis which is endemic in countries where majority of people eat raw or inadequately cooked beef. The infection is rare in India except in Jammu Kashmir and Northeast states, India. Majority of taeniasis patients are asymptomatic, few may present with a variety of abdominal symptoms and rarely hepatobiliary complications. Diagnosis is made commonly by finding proglottids and or eggs in the faeces. Here we report a chronic and uncomplicated case of *saginata* taeniasis resistant to niclosamide and albendazole but responded to a single dosage of praziquantel 15 mg per Kg body weight.

Keywords: Albendazole and niclosamide resistance, *Taenia saginata*, Taeniasis

INTRODUCTION

Taeniasis is a food-borne parasitic zoonosis caused by tapeworm species namely, *Taenia saginata*, *Taenia solium*, and *Taenia asiatica*. Among these *T. saginata* infection is worldwide in distribution and is more prevalent in countries where majority people eat beef. Prevalence of taeniasis in rural communities in India was reported as 9.7 % to 18.6 % Vora *et al* and Prasad *et al*.^{1,2}

The most important intermediate host of *T. saginata* is cattle but buffaloes, horses, camel, and giraffes may serve as intermediate hosts. Human acquired infection by consumption of raw or undercooked beef infected with *Cysticercosis bovis*, the larval stage of the parasite. Humans are the only definitive hosts which harbour the parasite in the small intestine and passed gravid segments and eggs in the faeces to the external environment. Cattles are infected by ingestion of the *saginata* eggs and

or gravid segments while grazing. Generally, majority of patients are asymptomatic, few patients may develop symptoms such as mild abdominal discomfort, nausea, loss of appetite, weight loss, and diarrhoea, or constipation and pruritus ani. Rarely, *T. saginata* may cause acute pancreatitis, perforation of the gall bladder and cholecystitis.³ Patients with *T. saginata* infection often experience more symptoms than those with *T. solium* or *T. asiatica* infections. It may be because the larger and longer size of *T. saginata* tapeworm than the later.

In some cases the only appreciable symptom may be the passing of tapeworm segments through the anus and in the faeces or clothing. Therefore, diagnosis depends on finding the taeniid eggs by microscopy examination and segments in the faeces and or under garment. Praziquantel, niclosamide, albendazole and nitazoxanide are the drugs available for the treatment of taeniasis

CASE REPORT

A 70-year-old male farmer presented to the medical outpatient department, Central Referral Hospital, Tadong, Sikkim, India with complaints of abdominal discomfort, heat sensation in the lower back and passage of segments of worm in the faeces off and on since seven months. The symptoms usually appeared early in the morning around 3 AM and relieved on getting up and physical activity. The infection did not affect his physical activities, appetite and digestion. He is non-alcoholic, non-smoker, non-vegetarian who relishes beef including smoked and dried meat regularly.

General and systemic examination revealed no abnormal findings except thin bodily constitution and mild pallor. History revealed that he was suffering from tapeworm infection since last seven years passing segments of worms in faeces and undergarments for which he was treated first with niclosamide and 3 repeated single dosages of albendazole by private practitioner and medical officer in Public Health Centre respectively. Following the treatment segments of worms measuring from 1-1.5 cm up to 1m in length were passed in the faeces. There were intervening periods varying from few months to several years during which no worms were passed. He also complained of crawling movement in and around anus and sometimes found segments of worms on his undergarment. Despite the treatment, the infection persisted, the segments of worm reappeared in the faeces about 6 months after the treatment. He presented a few segments for identification. A chronic tapeworm infection resistant to niclosamide and albendazole was diagnosed. The laboratory investigations revealed haemoglobin 10.5 gm %, total leucocyte count 7,000, neutrophil 65%, lymphocyte 25%, eosinophil 10%, and absolute eosinophil count 1500 per cumm and ESR 30 mm at the end of 1st hour (Westergrens's method).



Figure 1: Alcohol fixed segment.

Microscopy examination of the three consecutive faecal samples by formal ether concentration did not reveal any ova and cyst. Three segments of worm were available for examination. The segments were greyish white, semi-translucent and measured 10 to 15 mm in length and 5 to 7 mm in width (Figure 1).

One of the segments was fixed in 70 % alcohol, flattened between two glass slides and stained by borax carmine. The stained worm segment (Figure 2) showed 13 lateral uterine branches with numerous uterine eggs, and a genital pore on the lateral side. On the basis of the morphological features of the segment, the worm was identified as *T. saginata*. The patient was given a single dose of praziquantel 16 mg per kg body weight orally. Several segments of worms measuring from few inches to several feet were passed after the treatment. Thereafter, the patient had remained symptom free and had not passed any worm segment during the follow up period of 12 months.



Figure 2: Borax carmine stained segment.

DISCUSSION

T. saginata infection is common among beef eating population worldwide. The disease is endemic in Eastern Europe, Russia, Eastern Africa, Latin America, and Pakistan. Prevalence of taeniasis in rural communities in India was reported as 9.7% to 18.6% Voraet al and Prasad et al.^{1,2} It is rare among Hindus in Nepal and India. However, the Hindus in Bali, Indonesia have been eating both beef and pork as favourite dishes.³ In Sikkim, India some communities namely Bhutias, Lepchas, Tamang, Sherpa eat both pork and beef. They are in the habit of eating a variety of preparations of beef such as fried, smoked, air-dry, sausage and pickled which are not properly cooked. Majority of patients are asymptomatic or may present with mild GI symptoms or become aware of the infection when the motile proglottids emerge from the anus or pass in the faeces or are noticed in the undergarment or pants.

Differentiation between *T. saginata* from *T. solium* infection is important because the later species can cause very serious type of disease like cysticercosis, especially neurocysticercosis. Identification of Taenia species can be made by studying the morphological characteristics of the scolex, gravid proglottids of adult worms. However, a detailed clinical history will reveal important information regarding the passage and physical activity of proglottids. *T. saginata* gravid segments are actively locomotive as they pass through the anus in single or in chains that the patients may become aware of unusual feeling of trickling sensation around the anus or medial side of the thigh or sometimes seen on the undergarment.

In contrast, *T. solium* gravid segments will not exhibit active locomotion to be observed in the similar manner. In the present case the patient had frequent passage of short or long segments of worms, tingling sensations around anus and in the thigh due to the migratory segments which were also noticed on the undergarments. Thus the causative species was tentatively identified as *T. saginata* and later confirmed by gross examination of the alcohol (70%) fixed and borax carmine stained gravid segment. Alternatively the segment can be stained by India ink to demonstrate the uterus and its lateral branches. Taenia eggs could not be detected in the faecal samples by direct smear or formal ether sedimentation technique. Niclosamide, albendazole, nitazoxanide and praziquantel are the antihelminthic drugs available for the treatment of tapeworm infections. *T. saginata* infections resistant to niclosamide and praziquantel but sensitive to nitazoxanide was reported by Lateef et al.⁴

The present case was not responding to repeated doses of albendazole and niclosamide but responded to a single dosage of praziquantel. Taeniasis due to *T. saginata* is rare in India except in certain communities who eat beef regularly. Although majority of patients are usually asymptomatic, few cases may be presented with serious complications requiring surgical intervention. Therefore, early detection and specific antihelminthic treatment of infection is needed to prevent unwanted complication

CONCLUSION

Taeniasis due to *T. saginata* is rare in India except in certain communities who eat beef regularly. Although majority of patients are usually asymptomatic, few cases may be presented with serious complications requiring surgical intervention. Therefore, early detection and specific anthelmintic treatment of infection is needed to prevent unwanted complication.

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