

# PORK TAPEWORM (*TAENIA SAGINATA ASIATICA*) INFECTION IN RURAL BANGLADESH

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## Abstract

*Tapeworm infection is most common in cattle and pork breeding areas. Humans are the definitive host. Gravid segments of T saginata are passed in human feces to soil, where they are ingested by grazing animals, especially cattle. The eggs then hatch to release embryos that encyst in muscle as cysticerci. Humans are infected by eating raw or undercooked infected beef. Most individuals infected with T saginata are asymptomatic, but abdominal pain and other gastrointestinal symptoms may be present. Eosinophilia is common. The most common presenting finding is the passage of proglottids in the stool. Treatment is highly satisfactory with praziquantel.*

*Taenia Saginata Asiatica is a variant of Taenia saginata where the intermediate host is Pork. Normally the pork tapeworm is mean for Taenia solium. But in case of asiatica variant it is Taenia Saginata that can also lead to pork tapeworm infection. It is not uncommon in south east asia region. Here is a case report of pork tapeworm in a primary are hospital in Bangladesh*

**Key words:** *Pork, Tapeworm, Taenia Saginata Asiatica, Rural*

## Introduction:

Cestodes, or tapeworms, are segmented worms. The adults reside in the gastrointestinal tract, but the larvae can be found in almost any organ.<sup>1</sup> Human tapeworm infections can be divided into two major clinical groups. In one group, humans are the definitive hosts, with the adult tapeworms living in the gastrointestinal tract (*Taenia saginata*, *Diphyllobothrium*, *Hymenolepis* and *Dipylidium caninum*). In the other, humans are intermediate hosts, with larval-stage parasites present in the tissues.<sup>1,2</sup> Diseases in this category include echinococcosis, sparganosis, and coenurosis. For *Taenia solium*, the human may be either the definitive or the intermediate host. Humans are the only definitive host for the adult stage of *T. saginata*. This tapeworm, which can reach 8 m in length, inhabits the upper jejunum and has a scolex with four prominent suckers and 1000–2000 proglottids.<sup>2,3</sup> Each gravid segment has 15–30 uterine branches (in contrast to 8–12 for *T. solium*). The eggs are indistinguishable from those of *T. solium*.<sup>2,3,4</sup>

The highest prevalence is in Africa, particularly in eastern and north-eastern parts; it is also common in many countries in the Middle East, South America, and South-East Asia. *T. saginata asiatica* is a variant of *T. saginata* that is found in Asia (like Taiwan, Korea, Indonesia, Thailand, and Burma) and for which pigs are the intermediate host as infection follows ingestion of raw pig or wild boar liver.<sup>4</sup> There is no available data about incidence and prevalence of *T. saginata* in Bangladesh. Occasional case reports have been observed but related paper is scarce. Here is a description of a confirmed case reports of *T. saginata asiatica* observed in a primary health care center of Bangladesh.

## Case Report:

Mr X, 29 years normotensive, nondiabetic, a manager of a community center by profession with permanent residence in north mohammadpur, Hathazari, Chittagong presented in Hathazari Health complex on 26<sup>th</sup> April of 2008 with the complaints of recurrent lower abdominal pain and discomfort for 2–3 yrs. The abdominal discomfort is usually associated with loose

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stool which is foul smelling and occasional frothy in nature. The episodes of loose stool with mild abdominal pain persisted for 2-3 days and then all symptoms were relieved without any sequelae. The pain was occasionally cramping but mostly it is aching in nature, no radiation, no aggravating or relieving factor and not responsive to drugs of different modalities. He was advised by local practitioners with antibiotics like ciprofloxacin, metronidazole and antihelminth with regular intake of antiulcerant. But still the similar symptoms recur every three to four months. There was no nausea, vomiting, anorexia, fever, weight loss, dyspepsia, haematochezia or loose black stool during any period of his illness. The episodes were associated with mild anal itching but there was no tenesmus or rectal pain. There was no history of taking any NSAID or gastrointestinal irritating drug like steroids, potassium etc during any period of his illness. He had no history of travel to any specific area having diarrhoeal epidemic within or outside the country. By profession he is a manager of very busy community center and almost everyday he had to take rich food during lunch hour prepared for different parties. But nevertheless there was no episodes of acute gastroenteritis attack during his career as a manager. Although he had to attempt different food almost every day, on enquiry he denied taking any beef item during lunch due to religion background but there was history of taking pork meat in two occasion which were taken in two ceremony in club. Although the symptoms recur every three months, he never felt any serious problem to maintain his lifestyle. There was no symptoms beside these during any period of illness and enquiries on different symptomatology revealed no information. He had a decent family of middle class and socioeconomic and socio-behavioral circumstances are quite hygienic and standard. There was no one else in the family who had similar sort of illness.

Two months before his arrival to health complex, strange thing happens in his life. He experienced passage of a very large worm passing through anus while defecating in toilet. He was surprised to find that the colour of worm was purely white and it looks like a tape with multiple segment in between. The worm just continued to get rid from his anus and after few minutes he became frustrated and simply cut down the worm. He took advice from local doctor, got courses of antihelminth and the problem settled

then. But he had episode of discomfort in abdomen since than which wax and wanes. On the day he arrived in Hathazari Health Complex, he had similar episodes of passing of worm continued for few minutes. He got the worm in his bare hand and started encircling the worm around his pot for cleaning purpose (Bodna). The encircle worm was about three meter long and lastly it again had to cut off due to his frightening anxiety. He got the Pot while he rushes to Hathazari Health Complex. After his arrival, He was examined thoroughly by the medicine consultant. There was no finding in his general examination. Abdominal examination revealed mild abdominal tenderness around umbilicus with feeling of thread around different umbilical region. There was no organomegaly. All other systemic examination revealed no abnormality. Consultant of the health complex was eager to see the pot with encircle worm. The pot was encircled with flat white colored segmental form of huge and lengthy tape worm (Fig 1).

The worm was alive and moving as whole and also at



**Fig 2:** *The encircling tape worm around pot*

its different segment. It was removed from pot and was put in a table to find its length. It was one and half meter long and during procedure many segments tear but still moving (Fig.-2).

The patient was advised for complete blood count with total eosinophil count, Serum IgE ,stool routine examination, barium follow through, plain X-ray abdomen and USG of abdomen. His CBC revealed eosinophilia (15%) with total eosinophil count of 1350.



**Fig 3 :** The 1.5 meter long proglottids of *Taenia Saginata asiatica*

USG of abdomen revealed no abnormality. The barium follow through was also unremarkable. Stool routine examination revealed identification of gravid segments of *Taenia Saginata Asiatica* passed in faeces. Detection of eggs in faeces were also seen in microscopy. Final diagnosis was Pork Tapeworm (*Taenia Saginata Asiatica*) Infection. The patient was advised to be treated with praziquantal 10mg/kg single dose. The drug was not available in market and also not manufactured by any pharmaceuticals company in Bangladesh. The second choice of niclosamide was then advised with a single dose of 2gm. He took it appropriately but decline getting any benefit from it as he was still experiencing passage of segments of tapeworm in stool. Praziquantel tablet was found in India market and through his neighbor, he was able to get two tablets. He took a single dose and his condition completely improved within three days. No abdominal pain or discomfort and or passage of worm was observed since then. Regular follow up for 6 month revealed no relapse or appearance of symptoms.

#### Discussion:

The beef tapeworm is prevalent where cattle have access to human faeces and where humans eat undercooked beef.<sup>4,5</sup> The presented case did not have access to undercooked beef in life time. But he took possibly undercooked pork at lunchtime for few times. Pork is the intermediate host of *Taenia saginata asiatica* and that's what he has been suffering for long time. The ribbon-shaped tapeworm attaches to the intestinal mucosa by means of sucking cups or hooks located on the scolex. Behind the scolex is a

short, narrow neck from which proglottids (segments) form. As each proglottid matures, it is displaced further back from the neck by the formation of new, less mature segments. The progressively elongating chain of attached proglottids, called the *strobila*, constitutes the bulk of the tapeworm.<sup>6</sup> The length varies among species. In some, the tapeworm may consist of more than 1000 proglottids and may be several meters long. The mature proglottids are hermaphroditic and produce eggs, which are subsequently released. Since eggs of the different *Taenia* species are morphologically identical, differences in the morphology of the scolex or proglottids provide the basis for diagnostic identification to the species level.<sup>6,7</sup> In this case report we found that in stool both gravid proglottids are seen in stool. Gravid proglottids are passed at defaecation, often in short chains; free eggs also occur in faeces. The whitish proglottids, approximately 2 to 3 cm long, are actively motile, elongating and contracting.<sup>7</sup> In our patient the eggs are also seen in microscopy of stool. Occasionally a cellulose strip at anal region can identify the egg if it is absent in stool. Most patients are first aware of the worm by seeing proglottids on faeces (Fig. 3). Many will experience active worm migration through the anus, and this may induce an anxiety response.<sup>1</sup> It is very similar that we have seen in our patient. Praziquantel given in a single dose of 10 to 20 mg/kg after a light breakfast is the choice of agent. Alternatively single morning dose of 2 g niclosamide is given to adults and older children on an empty stomach can be given; the tablets should be chewed. Children of 2 to 6 years should receive 1 g, and those below 2 years, 500 mg.<sup>1,4</sup> In our patient, niclosamide, although available in market, did not show any response. Possibly *Taenia Saginata Asiatica* is unresponsive in this south east asia region which needs further study to make a confirmed statement. Praziquantel effect was dramatic but it is not available in our market. Pharmaceuticals companies of Bangladesh should manufacture the drug as the cases are not uncommon in Bangladesh.

After either drug the proximal part of the worm disintegrates in the gut and the scolex cannot be found. Failure of proglottids to reappear within 3 to 4 months indicates cure.<sup>1</sup> In our case, follow-up upto 6 month revealed no reappearance of proglottids in stool indicating that the patient is cured.

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