OLGU SUNUMU / *CASE REPORT*

Taenia saginata Removed Via Nasogastric Route: Case Report*

*Nazogastrik Yolla Çıkarılan Taenia saginata: Olgu Sunumu**

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ABSTRACT

Inguinal hernia repair is one of the most frequently performed elective surgeries in general surgery. However, this surgery may sometimes encounter complications such as incarceration and especially strangulation, which require urgent surgical intervention. In such emergency cases, severe conditions may occur, ranging from simple hernia repair to bowel resection, which may lead to high morbidity and even mortality. Parasitic infections occurring during or after surgery have rarely been reported in the literature. In this case report, we wanted to emphasize the importance of the Taenia saginata (T. saginata) helminth parasite removed by the nasogastric route. A 66-year-old female patient who came to the emergency room with complaints of nausea and vomiting was diagnosed with ileus due to an incarcerated hernia and, therefore, underwent small bowel resection. During aspiration of stomach content, a gastrointestinal parasite wrapped around a nasogastric tube was found. Macroscopic and microscopic examinations revealed that this parasite was T. saginata. After oral intake was deemed appropriate, anthelmintic treatment was administered, and the patient's general condition improved, and she was discharged. It should be kept in mind that T. saginata parasitic infection, which cannot be detected in clinical and laboratory tests and occurs coincidentally, may contribute to the development of incarceration in inguinal hernia patients living in areas with low socio-economic status, especially where sanitation is inadequate, consumption of raw or undercooked meat is common.

Key words: *inguinal hernia, incarceration, strangulation, nasogastric, Taenia saginata*

ÖZET

İnguinal herni onarımı, genel cerrahide elektif şartlarda en sık gerçekleştirilen ameliyatlardan biridir. Ancak, bu ameliyat bazen inkarserasyon ve özellikle strangülasyon gibi acil cerrahi müdahale gerektiren komplikasyonlarla karşı karşıya kalabilir. Bu tür acil vakalarda, basit bir fıtık onarımından bağırsak rezeksiyonuna kadar varabilen ve yüksek morbidite ile hatta mortaliteye yol açabilen ciddi durumlar ortaya çıkabilir. Cerrahi sırasında veya sonrasında ortaya çıkan paraziter enfeksiyonlar literatürde nadir olarak bildirilmiştir. Bu vaka sunumunda, nazogastrik yolla çıkan Taenia saginata (T. saginata) helmint parazitinin önemini vurgulamak istedik. Bulantı ve kusma şikâyetleriyle acil servise gelen 66 yaşındaki kadın bir hastada, inkarsere herniden kaynaklı ileus tanısı konulmuş ve bu nedenle ince bağırsak rezeksiyonu gerçekleştirilmiştir. Mide içeriği aspirasyonu sırasında nazogastrik sondaya sarılı gastrointestinal bir parazit bulunmuştur. Makroskobik ve mikroskobik incelemeler sonucunda bu parazitin T. saginata olduğu tespit edilmiştir. Hastaya oral alım uygun görüldükten sonra antihelmintik tedavi uygulandıktan sonra genel durumu iyileşen hasta taburcu edilmiştir. Klinik ve laboratuvar testlerinde tespit edilemeyen ve rastlantısal olarak ortaya çıkan T. saginata paraziter enfeksiyonunun, özellikle sanitasyonun yetersiz olduğu, çiğ veya iyi pişmemiş et tüketiminin yaygın olduğu, sosyo-ekonomik düzeyi düşük bölgelerde yaşayan inguinal herni hastalarında inkarserasyon gelişimine katkıda bulunabileceği göz önünde bulundurulmalıdır.

Anahtar kelimeler: *inguinal herni, inkarserasyon, strangülasyon, nazogastrik, Taenia saginata*

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Introduction

Taenia saginata, known as bovine tapeworm, is the most common tapeworm transmitted to humans. It is known that they widely infect many people in the world and our country. However, they are more frequently found in European and Asian regions where raw meat consumption is common. The most important reasons for this are societies' lack of socioeconomic, hygiene and education levels. In *T. saginata* infection, cattle are the intermediate host, and humans are the final host of the adult form[1]. Tapeworms can be found parasitically in the human digestive tract. Due to the tight adhesion to the intestinal wall or the inhibitory effect of gastric acidity, the parasite is unlikely to be transported to other sites. However, it has an irritative and traumatic impact on the adult; it may obstruct the respiratory tract during vomiting and enter the middle ear, uterine cavity and biliary tract through the Eustachian tube. Sometimes, proglottids in taeniasis can cause acute appendicitis by blocking the lumen of the appendix[2,3] and asphyxia by aspirating proglottids during vomiting, which can lead to life-threatening situations[4]. In summary, although rare, the literature suggests that these cases may require surgical intervention due to obstructions in the appendix, bile ducts or pancreatic ducts[3,5–7].

Inguinal hernia (inguinal hernia) is a surgical condition that occurs when a weak point in the abdominal wall pushes a part of the abdominal organs or intestine through the peritoneum. Inguinal hernia surgery is one of the most common operations performed in elective conditions in general surgery. Although it is not a dangerous condition on its own, sometimes the peritoneum or intestine that enters through the hole in the abdominal wall can get stuck there. If the swelling does not go in spontaneously and causes persistent and severe pain, an incarcerated hernia is mentioned, and a doctor should be consulted urgently. The continuation of this compression prevents the blood flow in the vessels, disrupts the nutrition of the compressed tissue and causes gangrene. This condition is called strangulated inguinal hernia. If not intervened urgently, it causes serious complications that can be life-threatening[8].

Although parasitic infections occurring after or during surgery are available in the literature, their numbers are very few. This study included T. saginata endo-parasite, which was removed via nasogastric route in a patient diagnosed with ileus due to incarcerated hernia.

Case report

History

A 66-year-old woman residing alone in a rural area came to the emergency department with symptoms of nausea and vomiting that had persisted for three days. It was learnt that the patient had no fever, diarrhoea-constipation, no known chronic disease and no history of drug use. Socioeconomic status was low.

Assessment

As a result of blood tests performed in the emergency department, WBC: 14700 µl, HGB: 14,2 g/dl, CRP: 115, Urea: 171.2, CREATININE: 2,54 mg/dl, GFR: 19,07 were determined. On standing direct abdominal radiograph, diffuse air-fluid levels in the tiny bowel anus and whole abdomen non-contrast computed tomography (CT) scan were reported as suspicion of ileus. The patient was consulted with general surgery with a prediagnosis of ileus. On physical examination, the general condition of the patient was moderate, consciousness was clear, orientation and cooperation were poor, and he was highly cachectic and hypotensive. Abdominal distension is a metallic ringing sound in the intestines on auscultation, which is pathognomic for ileus. There was widespread tenderness in all quadrants of the abdomen and an incarcerated hernia in the right inguinal region. However, the diagnosis of incarcerated inguinal hernia detected in the physical examination was not included in the official tomography report (Fig. 1).

Operation Summary

Ileus, due to the right incarcerated inguinal hernia, was diagnosed. Segmental small bowel resection was performed. After resection, gastric contents were tried

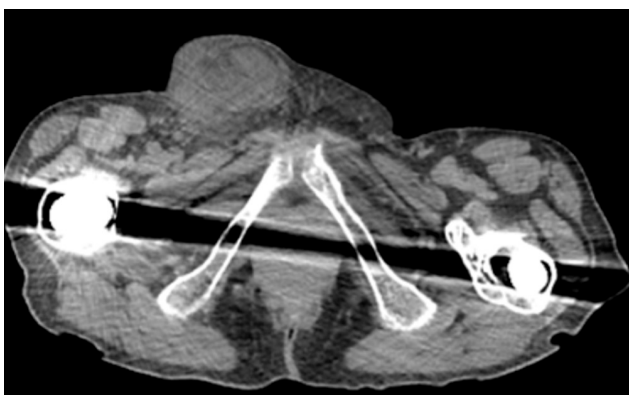

Figure 1. *Incarcerated inguinal hernia appearance on computed tomography (CT).*

Figure 2. *T. saginata is emerging from the nose of an adult.*

Figure 3. *T. saginata adult.*

to be aspirated with the help of a nasogastric probe. During the operation, palpation revealed that the stomach was complete, and the probe was in the appropriate position. Despite this, gastric contents could not be aspirated. Changing the nasogastric catheter was decided. When the nasogastric catheter was withdrawn, it was found that there was a gastrointestinal (GI) tract parasite wrapped around the catheter. After the nasogastric catheter was withdrawn, two more parasites approximately 106 cm in size were removed from the patient via the nasal route (Fig. 2). The stomach was still packed when palpated, and the removal of the remaining parasites by endoscopy was decided after surgery. Parasite samples were sent to the parasitology laboratory. Macroscopic and microscopic examination revealed *T. saginata* (Fig. 3). The patient was admitted to the postoperative 3rd step intensive care unit.

Outcome

On the 1st postoperative day, the patient's general condition was good, vitals were stable, and the patient was followed up with oral closure. Appropriate hydration

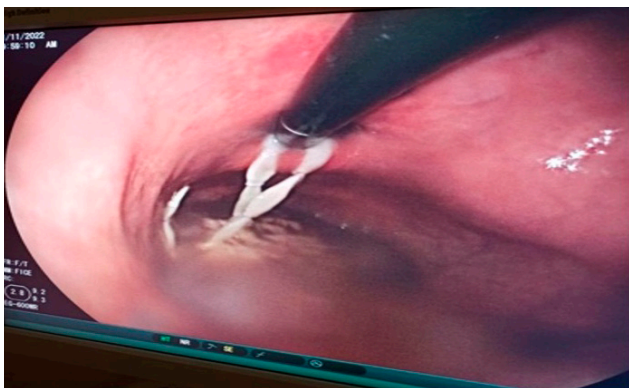

Figure 4. *T. saginata removed by endoscopy.*

and antibiotic treatment were planned. Parenteral nutrition was started for the very cachectic patient. Upper GI tract endoscopy was scheduled with a gastroenterologist. Upper GI tract endoscopy revealed a diffuse *T. saginata* cestode in the stomach. It was tried to be removed by endoscopy (Fig. 4). Since there was a risk of adhesion to the esophagus, especially the oropharynx, the anesthetist thought there might be a risk of airway obstruction. It was decided not to remove the remaining parasites endoscopically.

On the 4th postoperative day, since the patient no longer needed intensive care, she was taken to the general surgery service. To evaluate the anastomosis, oral contrast-enhanced CT was performed on the patient, which was suitable for renal function tests (RFT). Based on all these procedures, it was observed that the patient's anastomosis is intact, there is no leakage, and it is suitable for oral intake. The patient was started on oral nutrition and oral niclosamide (YOMESAN 500 mg tb 1x4 dose for one day) as an antihelminthic treatment. Approximately 48 hours later, in the anamnesis given by the patient's relatives, it was learned that the proglottids of the *T. saginata* parasite were defecated.

On the 8th postoperative day, it was learned that the patient, whose general condition was excellent and oral intake was average, was still defecating proglottids. The patient, who was planned to be discharged from general surgery, was consulted about infectious diseases. Infectious diseases outpatient clinic control was recommended, and the patient was discharged. It was learned from the patient's relatives that they would take the patient to a center in their city of residence for control purposes.

Consent was obtained from the patients participating in this study.

Discussion

Taenia saginata occurs where cattle are raised, human feces are not disposed of properly, meat inspection programs are weak, and meat is eaten without proper cooking. Of the 32 known *Taenia* species, only *Taenia solium* and *Taenia saginata* have significant medical relevance. About 50 million people globally are infected with *T. saginata* or *T. solium*[9]. Most people with taeniasis are either asymptomatic or have only mild to moderate symptoms. When symptoms do occur, they usually are mild and have abdominal pain, anorexia, weight loss or weakness. The most common complaint is the passing of proglottids (worm parts) in feces, which is associated with mild discomfort[1,10].

The most frequent severe complication of *T. saginata* infection in adults is appendicitis[3]. Additional reported complications encompass intestinal obstruction, bile or pancreatic duct blockage, abnormal vaginal bleeding, pneumatosis cystoid intestinalis (PKI), and, though rarely, anastomotic leakage or granulomatous gastritis[5,11,12]. Taeniasis invades the upper small intestine in humans. Unusually, this parasite is found in the stomach. A case in which the *Taenia* parasite found in the stomach of a young adult patient living in a rural area complained of nausea and vomiting excreted through the nasal route was reported in the literature [9]. Similarly, another study reported that *Taenia* proglottids were excreted from the nose and feces in a 4-year-old male child[13]. However, neither of the studies provided any comments on why the parasite is present in the stomach. In this case, it was observed that the patient developed intestinal obstruction due to an incarcerated hernia. Secondary to this, the parasites could not pass into the distal segments, thus reaching the stomach and esophagus. This brought to mind the idea that the parasite was not tightly attached to the intestinal wall; it created a very unusual living space in the stomach, and it might have moved to the nose because it was not sufficiently blocked by stomach acid.

Incarceration develops in approximately 5% of abdominal wall hernias and requires emergency surgery[14]. In the literature, only one case report has been found in which the *T. saginata* parasite was detected during minor intestine perforation repair after blunt abdominal trauma in a patient with inguinal hernia[12]. In this study, the patient had no history of trauma and resection was performed due to incarceration, and the GI tract parasite *T. saginata* was incidentally detected. Due to the rare cases and the limited number of studies, no definitive conclusion can be drawn regarding the role of GI tract parasites in developing inguinal hernia and its complications.

Parasitic infections are more common in regions with inadequate sanitation, consumption of raw or undercooked meat is typical, and in areas with low socio-economic levels. One of the pathogens that cause parasitic infections is *T. saginata*. In this case, diagnosed as an inguinal hernia, the *T. saginata* parasite was detected incidentally during surgery and endoscopy. Although such cases are rare, the presence of *Taenia* should be taken into consideration, and parasitological analysis should be requested during the evaluation of the etiology of patients presenting with abdominal pain and weight loss in areas with low socio-economic status. To prevent *Taenia* infection, it is emphasized that veterinary-controlled, hygienically preserved and well-cooked meat should be consumed. Educating the public about hygiene and cooking practices is of great importance in preventing such infections.

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Ethical Approval

Consent was obtained from the patients participating in this study.

Conflict of Interest

None declared.

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