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(CASE REPORT)



## Granulomatous peritonitis due to ascariasis: A case report from Duhok, Kurdistan Region of Iraq

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### Abstract

*Ascaris lumbricoides* is worldwide in distribution and most prevalent throughout the tropics, sub-tropics and more prevalent in the countryside than in the city. Complications of ascariasis, such as intestinal obstruction, appendicitis, biliary ascariasis, perforation of the intestine, cholecystitis, pancreatitis and peritonitis. Here we report a unique case of peritoneal granuloma in a 43 years old male, due to *Ascaris lumbricoides* infection which was suspected to be a malignancy, and discuss the importance of considering parasitic infection in the differential diagnosis of malignancy.

**Keywords:** Ascariasis; *Ascaris lumbricoides*; Granulomatous peritonitis; Intestinal mass; Intestinal perforation

### 1. Introduction

*Ascaris lumbricoides*, a leading helminthic infection worldwide, is also known as one of the soil transmitted helminths that's responsible for a major parasitic burden with an estimated over 800 million up to 1.2 billion infections globally [1, 2]. The infection is mainly encountered in tropical and low-middle income countries [3]. Infection occurs via feco-oral transmission with poor sanitation being the major risk factor [4]. Symptoms could range from asymptomatic infection, mainly, [1] to more severe manifestations as pneumonitis, appendicitis, pancreatitis, intussusception, cholangiohepatitis and intestinal obstruction [3, 5] or unique manifestation where it could easily be overlooked such as peritonitis causing peritoneal granuloma [6-8].

Granulomatous peritonitis has been regarded as a rare complication of intestinal ascariasis. Different theories hypothesized around the presence of granulomatous peritonitis by *Ascaris* [6, 7].

Here we report a unique case of peritoneal granuloma in a 43 years old male, due to *Ascaris lumbricoides* infection which was suspected to be a malignancy, and discuss the importance of considering parasitic infection in the differential diagnosis of malignancy.

### 2. Case Report

A 43-year-old married, male, from Sheladze (semi-rural area), Duhok governorate, working in the Peshmerga Army presented to the general surgery consultation chiefly complaining from abdominal pain that was located in the upper abdomen. The pain was constant/dull in nature, insidious onset, mild to moderate severity. The pain had no specific aggravating and relieving factor. The pain was followed by a solitary palpable mass just above the left side of the

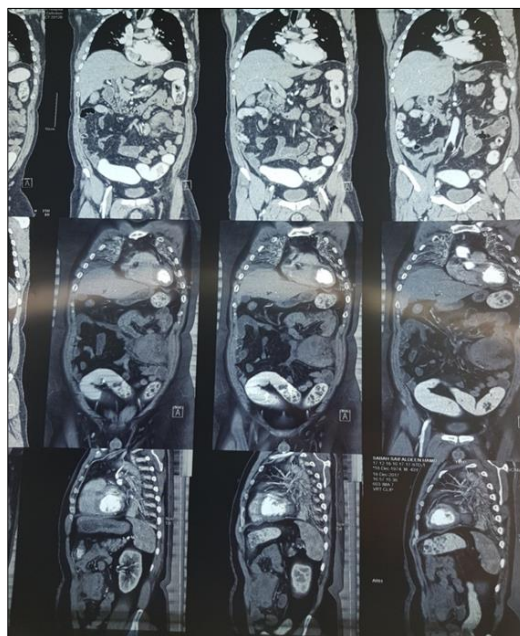
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umbilicus which brought patients attention out of sudden, lead to concern and seek for help. Overall condition was associated with fever and weight loss with the real percentage not being known by the patient

The patient was conscious and alert, vitally stable with unremarkable general examination; no anemia, no jaundice, no palpable lymph nodes. On abdominal examination, the abdomen was soft, with a palpable mass to the left of umbilicus. The mass was mildly tender and disappears with the contractions of the abdominal wall muscles.

Initial ultrasound for the abdomen was revealed evidence of a round 77 X 55 mm lesion with solid and cystic components and evidence of calcifications. The lesion was located at the left anterior abdomen with no clear association (mostly related to bowel). Then a contrast enhanced CT scan of the abdomen and pelvis was done (Figure 1), and showed a large anterior left sided abdominal mass lesion with heterogeneous enhancement pressing on small bowel with involvement of the wall and extending to cause abutting left anterior abdominal and surrounding fat stranding. The mass showed area of necrosis with associated multiple enlarged mesenteric lymph nodes. There were multiple enlarged suspicious para-aortic lymph nodes with largest one measuring 1.6 cm in diameter. Liver, gall bladder, spleen, kidneys, suprarenal glands, pancreas, aorta, and urinary bladder were normal. Contrast Enhanced CT of chest was unremarkable.



**Figure 1** Contrast Enhanced CT of Chest, Abdomen and Pelvis

Ultrasound guided biopsy from suspicious lesion was taken and was sent for histopathology. The latter report after 3 days showed mixed inflammatory cell infiltration with formation of multiple foci of acute inflammatory cells collection and necrotic debris; there is no malignancy. The appearances were consistent with suppurative inflammation. Then patient prepared for surgery.

The patient underwent surgery under general anesthesia. A midline incision was done through which the mass was seen encircled by greater omentum and adherent to a segment of small bowel. Resection en-block were done (the mass, omentum, segment of small bowel and related lymph nodes) and sent for histopathological examination (Figure 2).

Histopathology report was concluded granulomatous inflammation with increased eosinophils in small bowel and greater omentum. A parasitic body (worm) infection in the tissue (*Ascaris lumbricoides*) was seen. Mesenteric lymph nodes showed reactive follicular hyperplasia



**Figure 2** Gross Specimen revealed adult worms

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### 3. Discussion

*Ascaris lumbricoides*, a type of round worms, is the most common intestinal nematodes affecting humans with an estimated > 0.8 billion people being affected worldwide. *Ascaris lumbricoides* is typically seen in the tropical and developing countries due to poor sanitation and hot climate. Infection with ascariasis is common, yet, rare manifestations could take place [1,2]. Here we present a 43 years old male presented with chronic mild-moderate abdominal pain followed by a mass just above the umbilicus, with mild tenderness and disappearance with abdominal contraction which was speculated to be a tumor or inflammatory mass.

Granulomatous peritonitis due to parasitic infection should be placed in the differential diagnosis of malignancy in clinical practice as it could easily be mistaken for the latter [9]. Despite the condition is quite rare, with a much better prognosis than malignancy, it initially places doctors and patients in a distressing situation as imaging studies cannot differentiate the disease from cancer.

Ascariasis infection is mainly asymptomatic, severe complications such as malnutrition, poor physical development and intestinal obstruction could take place in chronic and heavy manifestation [3]. In this case, due to patients delay presentation, he presented with weight loss despite not being exactly known the amount, yet, the weight loss was concerning enough to be encountered by the patient himself.

Migration of the worms to the peritoneal cavity is uncommonly encountered in clinical practice, yet, worm migration is possible, with latter, patient becomes susceptible for various presentations depending on the organ involved [8]. *Ascaris* worms can be found in the peritoneal cavity which is speculated to take place via intestinal perforation. The intestinal perforation could be either primary where by large worm bolus or lytic secretions of worms combined with nibbling effect of its head induce pressure necrosis of healthy intestine allowing the worm to perforate through the intestinal wall, or could be secondary to a pre-existing weakness in the intestinal wall; inflammation as in appendicitis, inflamed Meckel's diverticula or ulcers as in typhoid ulcers for instance [8, 9]. Thus infestation with ascariasis can lead to peritonitis, present as an acute abdomen, or could seal spontaneously. In the peritoneal cavity, a granulomatous inflammation could be formed by the worms, and when the parasite dies, abscess forms which could present as a mass in the abdomen. The latter could be mistaken for malignancy [8].

In this case report, the patient was suffering from a chronic abdominal pain which latter presented as a mass. The mass of granulation tissue and peritoneal granuloma in this case could be explained by the migration of the worms in to the peritoneal cavity via silent primary perforation, sealing of the perforation and abscess followed by localization of the inflammation by the omentum, the policeman of the abdomen [8].

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### 4. Conclusion

The diagnosis of *Ascaris lumbricoides* should be considered in patients who live in endemic areas who present with features suggesting acute abdomen or tumor for the sake of early diagnosis and timely treatment to prevent severe complications as intestinal obstruction and peritoneal granuloma. Doctors should be aware regarding complications associated with *Ascaris lumbricoides* since worm infestation can easily be overlooked.

## Compliance with ethical standards

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### *Disclosure of conflict of interest*

Authors declare no conflict of interest.

### *Statement of informed consent*

The authors certify that they have obtained all appropriate patient forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name will not be published.

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