

## CASE REPORT

# Unraveling the Enigma: A Case Series of Human Pentastomiasis Encounters.

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### Abstract

Pentastomiasis is a zoonotic parasitic disease caused by pentastome parasites, typically reported in Africa, the Middle East, and Southeast Asia. The definitive hosts of *Armillifer* spp. (a subclass of pentastomes) are snakes, lizards, and other reptiles. Humans acquire the infestation incidentally by consuming uncooked, infected snake meat or drinking water contaminated with pentastome ova. We report two cases of human pentastomiasis, an uncommon condition today. This case report aims to provide the latest updates on human pentastomiasis, particularly in Malaysia, and promote awareness among primary healthcare providers.

**Keywords:** *Parasitic infection, pentastomiasis.*

## Introduction

Pentastomiasis, also known as "tongue worm" infestation or porocephalosis, was first documented a human case in Egypt in 1847. Since then, the disease has been reported sporadically in Southeast Asia, the Middle East, and Africa [1], predominantly caused by nymphs from the genera *Armilifer* and *Linguatula*. *Linguatula serrata* and *Armilifer armillatus* are the two main parasites, contributing to more than 90% of human infections [2]. Human pentastomiasis is a parasitic disease of zoonotic origin, wherein humans unintentionally become hosts for the parasite. Humans serve as dead-end hosts for pentastomes, acquiring the infection by consuming raw or undercooked snake meat containing the parasite larvae or ingesting water contaminated with pentastome eggs. Therefore, it is usually an incidental finding for unrelated pathology during surgical procedures, postmortem examinations, or radiological investigations [3]. However, the patient can present with clinical signs and symptoms, including fever, nausea, vomiting, diarrhea, jaundice, and abdominal pain. Human pentastomiasis was reported among locals in Malaysia in the 1960s, the last case was reported by Baha Latiff in 2011 [4].

### Case presentation 1

A 58-year-old Aboriginal male presented to the emergency department due to fever and on-and-off abdominal pain for one week. He had no known medical illness previously.

Examination revealed that he was mildly dehydrated but neither pale nor jaundiced. The vital signs were stable, with no documented spike in temperature. His abdomen was soft, mildly tender at the right upper quadrant, with no palpable masses. Digital rectal examination was unremarkable. His laboratory results showed eosinophilia with normal liver enzymes.

A plain abdominal radiograph, performed in supine position, showed multiple C-shaped (crescentic) opacities in all quadrants of the abdomen. A CT scan of the abdomen

complemented the findings of the abdominal radiograph. Since the objective was to locate the calcifications, only plain CT scan without contrast was performed. The CT scan showed multiple crescentic calcifications throughout the body, particularly in the solid viscera and peritoneal cavity. The calcifications were primarily concentrated in the lungs, liver, and mesenteric fat. The calcifications were relatively uniform, measuring 3mm to 6mm. There was no significant lymph node enlargement or bony lesions. The liver was not enlarged with a smooth margin [Figure 1].

In light of the radiological findings, further history was obtained. The patient confirmed that snakes had been a regular part of his diet. He would kill them and eat them raw or cut them into sizeable pieces, then boil the pieces in hot water before slicing them, adding spices, and cooking over an open fire. He started consuming snakes as a child.

Correlating the radiologic findings with the clinical history led to a diagnosis of pentastomiasis. The patient was admitted for one day for observation and then discharged with oral albendazole 400mg BD to expel the intestinal worm. He did not return for a follow-up appointment.

### Case presentation 2

A 43-year-old Aboriginal male presented to the Emergency department complaining of constipation for one month. He was triaged to the green zone as all his vital signs were stable. He had no previous medical illness. He was a farmer who worked within a densely forested area, spent extended periods living and working inside the jungle, and lived there for several days to weeks. While in the jungle, he sustained himself by consuming various insects, plants, other crawling creatures, and reptiles, including snakes.

The patient had an average body build and good hydration status upon examination. His vital signs were stable, with a blood pressure of 118/82 mmHg and a pulse rate at 80 bpm. The abdomen

was soft with no organomegaly. Figure 2 shows his chest (a) and abdominal (b) radiographs, which revealed multiple C-shaped opacities in the lungs bilaterally and in all quadrants of the abdomen. His blood investigations were all normal. A diagnosis of pentostomiasis was made, and the patient was discharged with oral albendazole 400mg bd.

## Discussion

Adult *Armillifer* spp. inhabit the respiratory tract of giant snakes. They produce large amounts of ova that are shed into the environment in snake feces and secretions. Intermediate hosts such as rodents ingest the ova, hatch, and larvae migrate to the viscera, encyst, and molt several times. The life cycle is completed when the snake ingests these rodents. Humans become accidental intermediate hosts after the uptake of environmental parasite ova from respiratory secretions or feces from the final hosts (giant snakes) or by consumption of contaminated snake meat [5].

Human pentastomiasis was documented in Peninsular and East Malaysia in the 1960s [4]. Pentastomid infection was discovered in a series of 30 consecutive autopsies conducted on Aborigines from five different states in West Malaysia; the most infected organs were the liver and the lungs [6]. Most cases are asymptomatic, usually found incidentally due to unrelated pathology [2]. Patients typically experience fever, abdominal discomfort, vomiting, diarrhea, jaundice, and tenderness in the abdomen. The organs most frequently afflicted are the liver, mesenteries, spleen, and lungs. Rarely do severe and potentially fatal cases occur, such as significant liver infections, mechanical ileus, and other forms of dissemination [7].

It is well known that snake meat consumption is a common practice in some parts of Southeast Asia. Risk factors for infection include consumption of undercooked contaminated snake meat and contact with live snakes and their secretions. Consuming river water tainted with snake

secretions is another way Malaysian aborigines could become infected [4].

Histopathological analyses are frequently necessary for a definitive diagnosis [3]. Recently, polymerase chain reaction (PCR) has emerged as a diagnostic tool. Still, its availability remains limited [8]. Diagnosis can be made radiologically when calcified nymphs of *Armillifer* spp. and less often, *L. serrata* are detected on the chest or abdominal radiographs, showing a horseshoe or C-shaped structures [2].

No treatment is required in asymptomatic patients. In symptomatic infections with heavy infestations, surgery is recommended to relieve obstruction and compressive symptoms. Pentastomiasis has no known effective antiparasitic chemotherapy; however, mebendazole, ivermectin, and praziquantel have been used in a few cases with apparent success [9,10].

Pentastomiasis in Malaysia is underreported but not uncommon. Cases often go undiagnosed due to nonspecific symptoms and lack of awareness. Primary healthcare providers play a crucial role in this disease's early detection and management. It is endemic in Malaysia, and snakes are essential in its transmission. To avoid infection, primary care providers should play a crucial role in diagnosing pentastomiasis and advising individuals, particularly snake handlers, to adhere to stringent preventive measures. Personal hygiene precautions are required to prevent human pentastomiasis [6]. These include boiling water before consumption and avoiding drinking river water. Authorities should provide health education to alert people about the risks of consuming undercooked snake meat, the possibility of transmission after handling snakes, and avoiding contact with snake excretions.

## Conclusion

In primary care setting, healthcare providers play a pivotal role in disseminating information and educating individuals about the prevention of human pentastomiasis by providing guidance on hygiene practices, offering advice on safe food

preparation methods, and emphasizing the importance of seeking medical attention promptly if symptoms and history suggestive of pentastomiasis arise. By fostering a proactive approach to prevention and early intervention, primary care providers can contribute significantly to reduce the incidence and impact of parasitic infection within the community.

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### Conflicts of interest

We have no conflicts of interest to disclose.

### Author contributions

Noor Emilia Emira wrote the first and final drafts. Abdul Hadi Said and Mubarak Mohd Yusuf reviewed, edited, and finalised the draft. All authors agreed with the results and conclusions.

### Ethics

Patients provided consent for the use of images and content for publication.

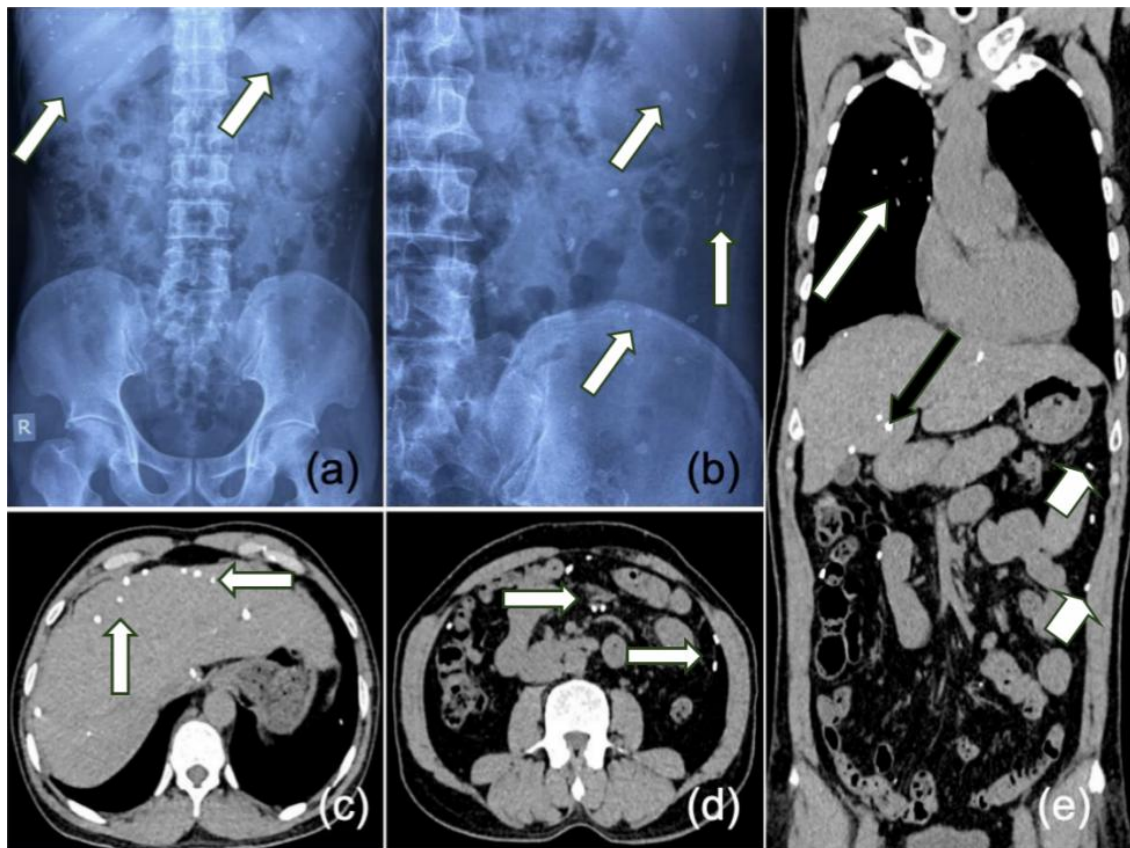


Figure 1. Abdominal radiograph (a) and an enlarged view of the left abdomen (b) showing numerous crescentic calcifications (arrows) scattered in the abdomen and pelvis. Plain CT abdomen in axial view reveals calcifications in the liver (c) and mesenteric fat (d). Coronal reconstruction CT image (e) showed calcifications in the lung (white arrow), liver (black arrow), and mesenteric fat (arrowhead).

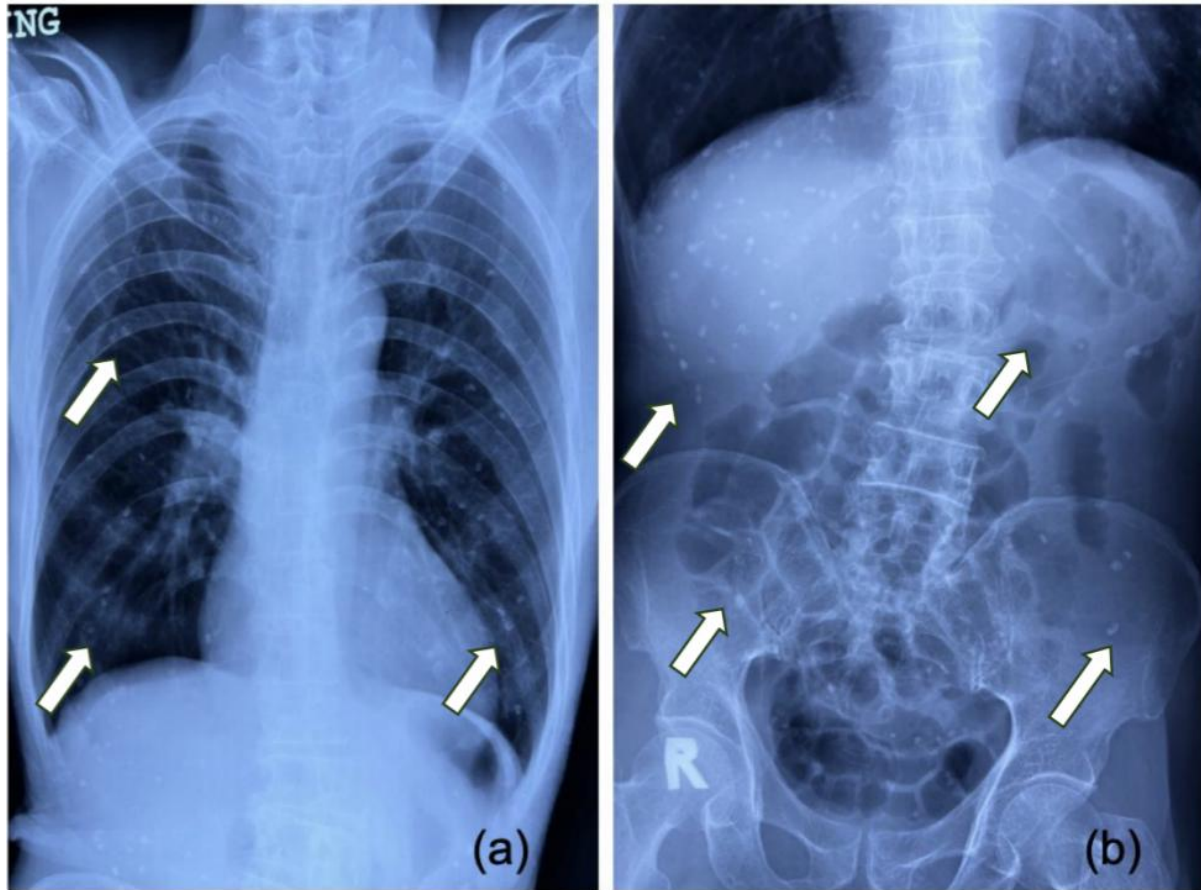


Figure 2. A chest (a) and abdomen (b) radiographs showed multiple C-shaped opacities in the lung and abdomen (arrow).

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