

Case Series

# A Case of Nonagenarian Gastric Anisakiasis with Atypical Presentation

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## Keywords

*Anisakiasis* · Gastric anisakiasis · Elderly patients · Mimic allergic dermatitis

## Abstract

**Introduction:** Anisakiasis is a parasitic disease caused by larvae from anisakid nematodes. In recent years, there has been an increase in cases of anisakiasis, a relatively uncommon medical condition. **Case Presentation:** A 93-year-old woman with chronic heart failure developed hives and nausea 6 h after eating silver flounder sashimi, leading to suspicion of fish allergy. Despite treatment, symptoms persisted and progressed to abdominal pain. An upper gastrointestinal endoscopy revealed an *Anisakis* larva in her stomach, an unusual finding given her age. After endoscopic removal of the living worm, the patient's symptoms were relieved. **Conclusion:** A case of atypical anisakiasis in a 93-year-old patient was demonstrated. This case underscores the importance of considering atypical presentations in clinical decision-making.

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## Introduction

Anisakid nematodes belonging to the genus *Anisakis* or *Pseudoterranova* have a life cycle involving marine mammals, crustaceans, and marine organisms. The cycle begins with the release of eggs by marine mammals into the water. These eggs hatch into larvae, which are then ingested by crustaceans such as krill or copepods. Within the crustacean, larvae develop into infective forms. When infected crustaceans are consumed by marine organisms such as fish and squids, the larvae penetrate the fish's gut wall and encyst in its

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flesh or viscera. Anisakiasis is caused by the accidental ingestion of raw or undercooked seafood infected with *Anisakis* larvae [1–4]. Since traditional Japanese cuisine includes ingestion of raw seafood such as sushi and sashimi, most cases of gastric anisakiasis have been reported in Japan [2–4]. However, with the recent popularization of raw seafood in other regions of the world, the number of patients with gastric anisakiasis is increasing globally [2]. In recent years, the medical fraternity has witnessed a growing incidence of the relatively uncommon finding of anisakiasis, raising alarms among healthcare professionals as well as patients [2].

Gastric anisakiasis is associated with a sudden onset of epigastric discomfort following consumption of infected food [2–4]. Conservative medical treatment is not an option, although some substances such as peppermint, creosote, and albendazole have been reported to suppress motion or eliminate anisakid larvae in vitro or in animal models [5]. Endoscopic extraction of viable larvae from the gastric mucosa is the optimal strategy for effective treatment [4, 6–8].

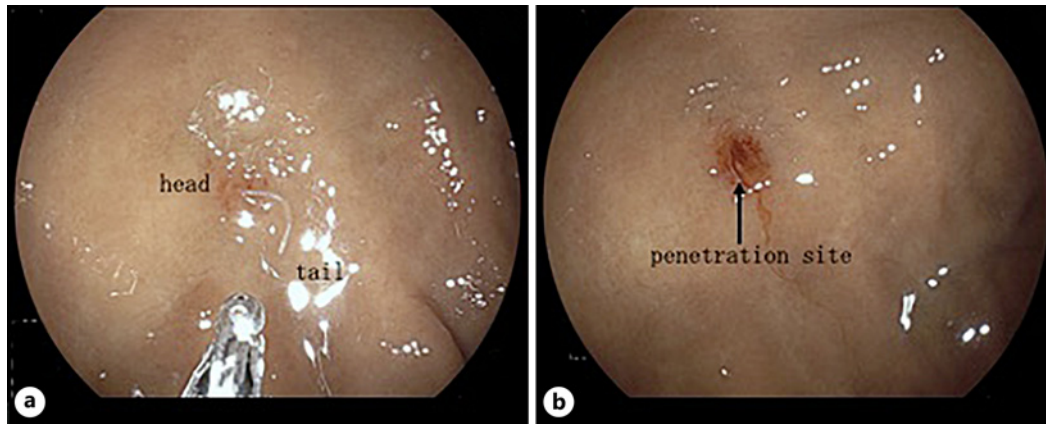
However, diagnosing anisakiasis is not always straightforward. The symptoms of anisakiasis, which include abdominal pain, nausea, vomiting, and diarrhea, are nonspecific and overlap with the symptoms of other gastrointestinal disorders. Besides, the symptoms of anisakiasis can resemble conditions such as food poisoning or allergic reactions to seafood [9, 10]. Furthermore, anisakiasis is relatively rare among people who do not consume raw fish; therefore, it is rarely considered as a differential diagnosis [9–11]. Thus, lack of awareness can lead to misdiagnosis or delayed diagnosis of anisakiasis; therefore, raising awareness regarding this condition is important. In this report, we have described a case of gastric anisakiasis in an individual of exceptionally advanced age.

## Case Report

A 93-year-old Japanese female presented at the emergency department complaining of hives and nausea. She had consumed raw silver flounder at home 6 h before the development of the symptoms. Her vital signs at the initial visit were normal. Physical examination revealed persistent redness on the trunk, while the nausea had already subsided. Suspecting a fish allergy, the emergency doctor prescribed an antiallergic drug and instructed the patient to rest at home. However, the hives persisted even after taking the medication. Ten hours after the initial visit, the patient developed abdominal pain and returned to the emergency outpatient department.

Physical assessment revealed moderate tenderness in the epigastric region of the abdomen, without any rebound or guarding. Blood test indicated only a mild elevation in creatinine of 1.22 mg/dL and brain natriuretic peptide of 266 pg/mL. She had a white blood cell level of 6,140/ $\mu$ L, C-reactive protein of 0.47 mg/dL, and 61/ $\mu$ L eosinophils, indicating an absence of inflammatory response or elevated eosinophil levels. Additionally, there were no findings suggestive of myocardial infarction, such as elevated high-sensitivity troponin I on the blood test or ST-T changes on the electrocardiogram. The patient's current history of epigastric pain with otherwise nonsignificant findings led to the suspicion of gastric anisakiasis and an urgent upper gastrointestinal endoscopy was performed.

Endoscopy revealed the presence of an anisakid larva in the fornix of the stomach. Conventional forceps, generally used for gastric tissue biopsies, were used to remove the larva (Fig. 1a). The absence of any more larval remnants in the stomach was verified, and the procedure was concluded (Fig. 1b). The gastric pain subsided approximately 30 min after the removal of the larva. Morphological microscopic examination indicated that the larva was in the third stage of *Anisakis* or *Pseudoteranova*. Because of the sample damage caused during



**Fig. 1.** Endoscopic image of the *Anisakis* sp. larva. Endoscopic image with white light imaging of the stomach displays the larva penetrating the mucosa of the greater curvature of the fornix. **a** The surrounding mucosa shows presence of redness and edema. **b** The absence of remnants of the larva in the stomach was verified and the procedure was concluded.

the removal procedure, morphological identification of the larva species was not possible (Fig. 2a–d). Molecular analyses of the larva using DNA sequencing determined that it was *A. simplex sensu stricto* (s.s.).

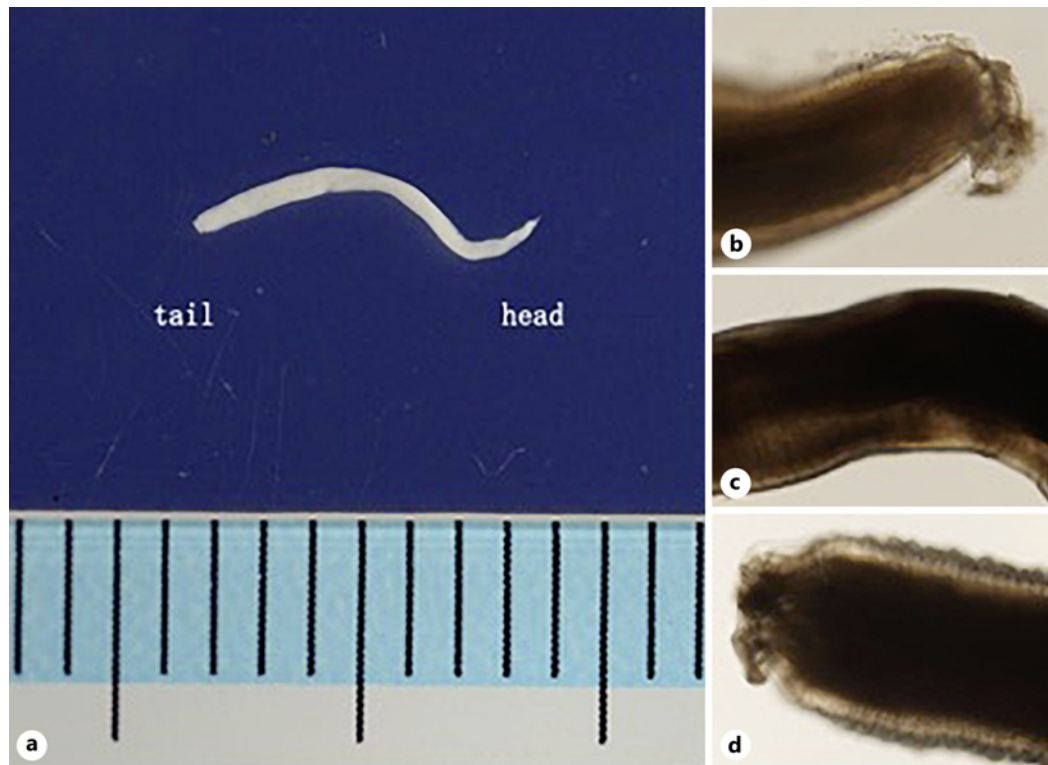
## Discussion

In the current case of anisakiasis, reaching a conclusive diagnosis through endoscopy was difficult since the case was atypical in two aspects. First, the initial symptom was only hives and nausea, and epigastric pain was absent. Second, the advanced age of the patient, which was atypical in publications, might have introduced bias, potentially leading to the exclusion of anisakiasis from the differential diagnoses.

According to a report from Japan, the mean age of patients suffering from anisakiasis is  $54.5 \pm 15.6$  y/o [4], which means that most cases of anisakiasis belong to the middle-age range, although some studies such as a review by Shamsi shave and Barton [2] reported incidence of anisakiasis in exceptionally young or old patients ranging from 7 months to 85 years. Thus, even though the age and clinical appearance of the current were atypical, considering the history of raw fish consumption, it is worth including anisakiasis in the differential diagnoses.

The American Society for Gastrointestinal Endoscopy advocates that, through meticulous periprocedural assessment and attentive care, it is safe to conduct diagnostic and therapeutic endoscopic interventions in elderly patients [12]. Two cases of endoscopic treatment in exceptionally elderly patients in Japan, both centenarians, who had presented with stone-related cholangitis and colon cancer have been documented by Kume. The first case involved an endoscopic sphincterotomy for common bile duct stones. In the second case, endoscopic colon stenting was successfully performed [13]. The current case involved the safe removal of the anisakid larva. Thus, an endoscopic procedure for acute anisakiasis can be performed safely in the geriatric population when urgently required. However, a careful evaluation of treatment appropriateness as well as assessment of activities of daily living, comorbidities, and other pertinent factors is imperative. Natural bias might incline concerned personnel to avoid performing invasive procedures on elderly patients, but such subconscious bias may be inappropriate when the procedure is indicated.

Furthermore, a diagnostic tool such as “anisakiasis diagnostic score (ADS)” might be instrumental in avoiding bias, leading to correct and appropriate treatment strategy selection



**Fig. 2.** Morphological image of *Anisakis*-like larva. **a** The larva measures 8 mm with damaged head (right end) and tail (left end). Morphological examination with a magnification power of 40 revealed the damaged head portion of the larva without the boring tooth (**b**), the body was covered with a rigid cuticle (**c**), and the posterior end with part of the tail missing (**d**).

[14]. In the ADS study, cases that required emergency gastroduodenal endoscopy and noncontrast computed tomography (CT) were retrospectively investigated, and a score, which was indicative of the number of positive findings from five indicative CT findings (circumferential gastric wall thickening, gastric wall thickening extending more than two segments, bulky and low-density gastric wall thickening, increase in peri-gastric fat density, and ascites), was developed. The optimal cutoff score of 4 points indicated high sensitivity and specificity of 91% and 84%, respectively [14]. Although this ADS only focuses on CT findings, a more generally applicable risk stratification tool that focuses on clinical symptoms and blood test results is warranted.

In conclusion, we demonstrated a case of atypical anisakiasis in a 93-year-old patient. Making the correct diagnosis was initially challenging, but the patient was successfully treated. This case underscores the importance of considering atypical presentations in clinical decision-making. An objective scoring tool to aid unbiased diagnosis is required. The current case report has been prepared in compliance with the CARE Checklist, which has been attached with this report as online supplementary material (for all online suppl. material, see <https://doi.org/10.1159/000539304>).

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### Statement of Ethics

Written informed consent was obtained from the patient for publication of this case report and the accompanying images. Ethical approval was not required for this study per local and national guidelines.

### Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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### Author Contributions

Toshio Arai and Seisuke Saito analyzed and interpreted the patient data and had direct contact with the patient. Takahiro Kinebuchi and Hiromu Sugiyama made the pathological diagnosis. Koji Nishikawa assisted in the editing and revision process. Yasuyuki Morishima and Hiromu Sugiyama participated in the genetic analysis and critically reviewed the manuscript. All authors have read and approved the final manuscript.

### Data Availability Statement

All data generated or analyzed during this study are included in this article and its online supplementary material files. Further inquiries may be directed to the corresponding author.

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