



## Case report

## Asymptomatic gastric anisakiasis detected in gastric cancer screening: A case report

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## ABSTRACT

Anisakiasis is a parasitic disease caused by *Anisakis simplex* and has become an emerging zoonosis as preferences for eating raw or undercooked seafood have become more common. Few case reports of asymptomatic anisakiasis have been published to date. A 79-year-old asymptomatic man underwent esophagogastroduodenoscopy (EGD) for gastric cancer screening. The gastroenterologist diagnosed superficial gastritis without any malignant lesions but found an *Anisakis* larva while reviewing EGD images. The physician performed a second EGD and removed the larva. The patient reported that he ate the flatfish *sashimi* for dinner on the day before the first EGD. This case indicates the existence of asymptomatic gastric anisakiasis, indicating that anisakiasis incidence may have previously been underestimated.

## Introduction

Anisakiasis is a parasitic disease caused by nematodes of the species *Anisakis simplex* that infect the body after the consumption of raw or undercooked seafood. Anisakiasis can be divided into three categories: gastric, intestinal, and ectopic anisakiasis; among these, gastric anisakiasis is the most prevalent [1,2]. The most common symptom of gastric anisakiasis is severe epigastric pain within hours of ingestion of *Anisakis* nematodes. Subsequently, nausea and vomiting with allergic reactions such as urticaria occur. Gastric anisakiasis can be diagnosed by esophagogastroduodenoscopy (EGD), which reveals the presence of *Anisakis* nematodes in the stomach [1]. Anisakiasis has become an emerging zoonosis as preferences for eating raw or lightly cooked seafood have increased [3].

Clinical management of anisakiasis is the surgical removal of the larva by endoscopy or surgery if the larva is localized in a lesion where the endoscopic removal is not applied, such as the small intestine or omentum [4]. It is reasonable because the definite diagnosis of anisakiasis is made by endoscopic or pathological observation. The anti-parasitic medication with albendazole is a treatment option;

however, it is rare to be applied in our clinical practice [5].

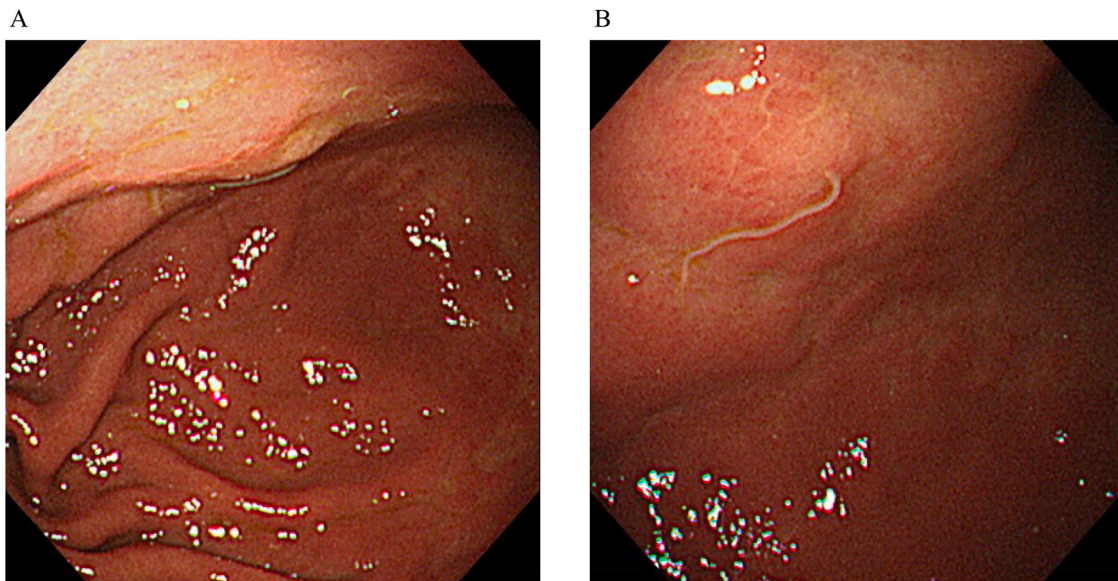
Here, we present a case of incidental detection of asymptomatic gastric anisakiasis during EGD for routine health examination in a Japanese community with habits of eating raw fish. Our case suggests the existence of asymptomatic cases of anisakiasis.

## Case report

An asymptomatic 79-year-old man underwent EGD for gastric cancer screening in a community medical institute (Soma Central Hospital, Soma, Fukushima, Japan). The examination was performed as part of a health checkup program run by the local government. The patient had no specific history of the present illness. The patient denied any history of anisakiasis. The patient had a history of successful eradication of *Helicobacter pylori* at the age of 74 years. The patient also had a history of colorectal polypectomy. He was diagnosed with hypertension; however, he was not taking any prescribed medication at the time of examination. The patient had no relevant family histories. On arrival, his vital sign was normal. Urticaria was also not observed. Laboratory results were within the normal range. A gastroenterologist performed EGD at 10:00

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**Fig. 1.** Esophagogastroduodenoscopy images of the anterior wall of the gastric antrum are shown (wide [A] and closed [B] views). An *Anisakis* larva is seen on the anterior wall of the gastric antrum during the first endoscopy.

a.m. and diagnosed superficial gastritis, which did not require treatment. The patient went home after EGD. The physician then asked the patient to return to the hospital because an *Anisakis* larva was recognized on the anterior wall of the gastric antrum in EGD images. At 11:00 a.m., the physician performed a second EGD. No erythematous lesions were observed around the *Anisakis* bite area on the anterior wall of the gastric horn (Fig. 1). The diagnosis of gastric anisakiasis was made by the EGD. The gastroenterologist removed an *Anisakis* larva during the second EGD. The physician interviewed the patient after the second EGD. The interview revealed that he ate flatfish *sashimi* around 5:00 p.m. on the day before the examination. He obtained the raw flatfish from his friend in a non-commercial exchange. The patient did not show recurrence of gastric anisakiasis for up to 1 year after EGD.

## Discussion

We present a case in which an *Anisakis* larva was incidentally identified in the stomach during EGD performed as a routine health examination for gastric cancer screening. This case indicates the existence of asymptomatic gastric anisakiasis and suggests that gastric anisakiasis can be underdiagnosed. Only a single report on asymptomatic gastric anisakiasis was found, in which the larvae of *Anisakis* were simultaneously identified in the stomach and colon by EGD and colonoscopy, respectively[6].

Endoscopic detection of *Anisakis* nematodes may not occur if the endoscopist does not suspect anisakiasis in asymptomatic patients. In our case, the endoscopist did not identify the *Anisakis* larva during the initial EGD observation because the allergic reaction around the larva in the stomach mucosa was mild. The small size of the larva (2–3 cm in length) could contribute to the failure of immediate endoscopic identification. Another reason could be an anchoring bias since the endoscopist was focused on detecting malignant lesions during gastric cancer screening[6]. Multiple conditions were therefore involved in the error of the initial EGD. Even skilled endoscopists may not observe *Anisakis* nematodes if they do not consider it as a differential finding. Only three cases of asymptomatic anisakiasis were found by chance among 1496 gastric cancer screenings between April 2008 to July 2012 in our institution; however, we might overlook the anisakiasis in the past.

In the present case, the patient consumed raw fish following a non-commercial exchange. Visual inspection for *Anisakis* is regularly performed before commercial distribution; however, no inspection is

commonly performed in private exchanges[3]. Physicians should consider anisakiasis as a differential diagnosis in communities with habits of consuming raw or undercooked fish. Our institute is located in Soma, Fukushima Prefecture, which is the leading fishing area in Japan. Residents habitually eat raw fish that is not commercially distributed. Our institute has identified 26 patients with *Anisakis* larvae among 47 suspected cases in the last five years. The number of reports of anisakiasis is increasing worldwide, along with the consumption of raw fish [7–9]. Reassessment of the incidence of anisakiasis is necessary to understand its epidemiology. Serologic evaluation of anisakiasis may be helpful, although the sensitivity and specificity of such evaluations are limited[10–12].

The endoscopist removed the larva in the present case because of possible sequelae. However, long-term complications of anisakiasis are not fully understood. Hemorrhagic gastric ulcers due to chronic gastric anisakiasis and anisakiasis-induced eosinophilic esophagitis were reported[13,14]. A possible association with malignant gastrointestinal diseases was suggested albeit a definite relationship with cancer development remains unclear[15,16]. Long-term follow-up is warranted to elucidate any chronic influences.

## Conclusion

Anisakiasis is an emerging parasitic disease, as the habit of eating raw or undercooked fish is growing globally. We encountered a patient with asymptomatic gastric anisakiasis diagnosed incidentally during EGD for cancer screening. The endoscopist failed to identify the larva during the initial EGD, but detected it while reviewing the EGD images. *Anisakis* nematode was then removed during the second EGD. This case suggests underdiagnosis of anisakiasis. The long-term effects of anisakiasis remain unknown; thus, a follow-up study on anisakiasis is warranted.

## Ethical approval

Not applicable.

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### ORCID iD authorship contribution statement

**Fumiue Harada:** Conceptualization, Data collection, Writing – original draft, Writing – review & editing. **Kana Yamamoto:** Writing – original draft, Writing – review & editing. **Akio Takeuchi:** Data collection, Writing – review & editing. **Hiroshi Uenishi:** Data collection, Writing – review & editing. **Yosuke Tachiya:** Data collection, Writing – review & editing. **Chika Yamamoto:** Writing – review & editing. **Yuta Tani:** Writing – review & editing. **Mutsuko Ohnishi:** Writing – review & editing. **Morihito Takita:** Writing – original draft, Writing – review & editing. **Tetsuya Tanimoto:** Writing – review & editing. **Masahiro Kami:** Writing – review & editing. **Ryusaburo Shineha:** Supervision.

### Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

### Conflict of interest statement

The authors report there are no competing interests to declare.

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