

## **Parasites could be lurking in your sushi, doctors warn**

By Susan Scutti

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(*CNN*) — Anisakiasis, an illness caused by eating parasite-contaminated fish or seafood, is on the rise in Western countries where eating sushi and other raw or undercooked fish and seafood dishes has gained popularity, according to a report published Thursday in *BMJ Case Reports*.

The authors draw a portrait of the illness from the experience of a previously healthy 32-year-old man who developed severe upper gut pain, vomiting and fever that lasted a week before he entered the hospital.

Dr. Joana Carmo, lead author and a physician in the gastroenterology department of the Hospital of Egas Moniz in Lisbon, Portugal, and her co-authors say a physical examination indicated tenderness in the abdomen, while the lab results showed an increase in white blood cells, which is a typical sign of infection.

During an interview, the man said he had recently eaten sushi.

### **Fishing out a parasite**

Based on this dietary information, his doctors performed an upper gastrointestinal endoscopy: a non-surgical examination of the digestive tract, using a flexible tube with a light and camera on the end. This inner vision revealed a swollen intestinal membrane with a firmly attached parasite, its end penetrating the stomach.

The doctors removed the larval worm with a special net.

The Roth net is a small plastic net that is usually used to remove polyps from the colon as well as any other foreign body found in the digestive tract -- namely parasites, Carmo said.

Analysis revealed the worm to be of the genus *anisakis*.

"*Anisakis* can infect salmon, herring, cod, mackerel, squids, halibut and red snapper," Carmo said. After the parasite was removed from his gut, the patient's symptoms immediately began to clear.

"A few decades ago, doctors did not know this infection," Carmo wrote in an email.

The [first case of human infection with anisakiasis](#) was described by scientists in the Netherlands during the 1960s. Because this first record occurred after the patient

had consumed some lightly salted herring, the infection was originally referred to as "herring worm disease."

Since then, cases have appeared in many other countries, though "mainly in Japan because of the frequent ingestion of raw fish," Carmo said.

### **High numbers in Japan and Spain**

Miguel Bao, a doctoral candidate in systems biology at the University of Aberdeen who was not involved in the new study, said Japan sees about 2,000 to 3,000 cases of diagnosed anisakiasis each year.

Yet recent estimates suggest that about 8,000 annual anisakiasis cases may be occurring in Spain due to consumption of raw and marinated anchovies, Bao said. He explained that the cases in Spain are based on a risk assessment, but Japanese cases are based on actual diagnoses, so a direct comparison is "not valid."

Carmo said that "in European countries, fish infestation is probably more frequent than we thought. One study showed that anisakis simplex (the species most commonly associated with human infections) was found in 39.4% of the fresh mackerel examined from different fish markets in Granada, Spain."

Another study in Spain found that nearly 56% of blue whiting fish sold in five chain supermarkets showed infestation, Carmo said.

Cases have begun to appear in the United States, South America, Europe and other areas of the globe, [according to the US Centers for Disease Control and Prevention](#).

Although the CDC does not conduct surveillance of these infections, "rare cases have been identified in the US," spokeswoman Amy Rowland said.

Bao said scholars generally consider anisakiasis to be both underestimated and underdiagnosed.

"There is a need to better estimate and understand the burden of disease worldwide (especially in those countries where consumption of raw or undercooked fish is common)," Bao said.

The actual infection or illness results when the anisakid nematodes (worms) invade the stomach wall or intestines, causing gastrointestinal symptoms of pain, nausea and vomiting, according to the CDC. Some people will develop complications,

including digestive bleeding, bowel obstruction and peritonitis, inflammation of the inner wall of the abdomen.

Once infected, some people may experience an allergic response, including swelling, skin rash or even anaphylaxis, which can cause difficulty breathing and loss of consciousness. It is this allergic response that can be life-threatening, Bao said.

Anisakiasis cannot be transmitted from one person to another.

### **FDA protections**

Although the anisakis parasite can live as a larva for several weeks in a human stomach, it will die before developing into an adult. But before it dies, it produces an inflamed mass in the esophagus, stomach or intestine.

Untreated gastric disease can lead to chronic, ulcer-like symptoms lasting for weeks to months, Bao said.

Though treatment is not always necessary, removal by endoscopy may be necessary to alleviate symptoms. No specific drug has been identified to kill the live parasites, Bao said, adding that "surgical removal is occasionally required."

There are other ways of getting rid of the worm.

"Some people experience a tingling sensation after or while eating raw or undercooked fish or squid. This is actually the worm moving in the mouth or throat," reads the CDC website. In such cases, it is possible to cough up the worm or remove it by hand. Sometimes, vomiting expels the worm.

To help reduce the risk of illness caused by eating fish or squid, the [Food and Drug Administration has food safety programs and hazard reduction procedures](#) (PDF) that distributors of fish and squid are expected to follow.

"For example, freezing fish to the appropriate temperature and for the appropriate duration can kill parasites," Rowland said. The European Union follows similar practices, according to Carmo.

Along with avoiding raw fish, the CDC recommends that seafood be cooked to an internal temperature of at least 145° F (about 63° C). Carmo said freezing to minus-20 degrees Celsius for a minimum of 72 hours also kills the parasite.

Some people, though, will never give up eating their beloved sushi or other raw fish delights.

"Properly trained sushi chefs can detect anisakis larvae," Carmo said. "They are grossly visible in the fish."