

Letters to the Editor

Anisakiasis outbreak by *Anisakis simplex* larvae associated to Peruvian food in Spain

Key words: Anisakiasis. Anisakis. Disease Outbreaks. Seafood.

Dear Editor,

I have read the interesting article published in the journal that you direct, about massive infections by *Anisakis simplex* larvae, in two adult people with the only important epidemiological antecedent of having consumed a typical plate of Peru prepared with raw fish (1). Due to the characteristics of the cases, I want to comment some aspects with the purpose to enrich the description and thus contribute to a better epidemiological knowledge of the anisakiasis or anisakidosis behavior. It is a foodborne disease (FBD), caused by larvae L₃ - in the majority of the cases - of *Anisakis simplex* or *Pseudoterranova decipiens* usually that cause gastrointestinal symptoms (2); however, it also may be associated with mild or severe allergic-type reactions (3).

The two cases described (1) correspond to an outbreak because they were associated in time, space and person to a common source. Until today, the only one outbreak described of this marine zoonosis occurred in France in 6 people with the antecedent of having consumed inadequately treated fresh herring (4). Also, an outbreak by *Pseudoterranova larvae* was reported in 3 of 4 people that consumed "cebiche" prepared with raw hake in a restaurant in Cartagena, Chile (5). Outbreaks from allergic forms have been reported associated to consumption, principally, of *Merluccius merluccius* "Hake" and *Engraulis encrasicolus* "Anchoy" in Spain (3).

In the summer of 2002, in Lima, Peru, 5 members of a family were reported for presenting acute diarrheal disease (ADD). They had the epidemiologic antecedent of having

consumed "cebiche" prepared with raw "perico" *Coryphaena hippurus* and the clinical sign and symptoms they presented (abdominal pain, nausea and diarrhea) were compatible with acute gastric anisakiasis. It is possible that it was an outbreak of anisakiasis in family members by *A. physeteris* larvae (unpublished data), unfortunately the cases were lost in follow up and it was not possible to verify the outbreak. The "perico" was one of the fish species intensely parasitized by *A. physeteris* larvae along the Peruvian coast during "El Niño" phenomenon in 1997-1998, which could cause the anisakiasis emergence (6).

In a FBD outbreak it is indispensable to identify the source of contamination, the mechanisms of transmission, the source and exposure place, and the etiologic agent, which is key information to search for other related cases and to implement control and prevention measures.

It is probable that the two cases of anisakiasis described in Spain (1) were related to eating "cebiche" or some variant of this very appreciated meal, that has been related in Peru to confirmed cases of gastric anisakiasis by *Anisakis* larvae, another one by *A. simplex*, two probable cases by *A. physeteris* larvae and four cases by *P. decipiens* larvae (6).

With the Peruvian food globalization, "cebiche" is being eaten elsewhere in the world. It is also consumed in Chile, where has been associated with 11 cases of infection by *Pseudoterranova* larvae (5). The increasing food consumption based on raw fish has been considered as a health determinant in the increment of anisakiasis (6) and *Pseudoterranova* larvae infections (5). The preparation of "cebiche" with fishes from other latitudes could increase the cases of anisakiasis due to the magnitude of the infection intensity by *Anisakis larvae*. That situation must be taken into account to implement the appropriate preventive measures and education to the population, such as freezing the fish at -20 °C during 48 to 72 h, or cooking the fish at 60 °C for more than 10 min. Also in the commercialization of marine products, fish evisceration should be considered after its capture in order to avoid the migration of the larvae to the musculature (6). However, despite those measures, massive infections in humans are being reported. Therefore, it is important to evaluate other prevention measures.

The two cases reported could have prepared the food at home by using raw fish, probably hake or another intensely contaminated species by L₃ *A. simplex* larvae, commercialized in Madrid, although it can't be discarded they have consumed it in a restaurant; in that case the outbreak could have been of greater magnitude. In this scenario it would have been important to know the number of people exposed in order to calculate the attack rate of the outbreak and to identify the people exposed. The epidemiologic investigation should have taken into account recent travels to discard the place of infection; they could have been infected in Peru or any other place. Fortunately the prevalence and infection intensity of commercial fish in Peru by *Anisakis* and *Pseudoterranova* larvae are low except for the "perico" fish (6); therefore, massive infection cases, in normal climatic conditions, are expected to be very rare.

The time elapsed from the fish intake up to the beginning of the symptoms is important in the natural history of the anisakiasis. This period, in massive infections by *A. simplex*, can be as brief as 0.5 h (7) and up to 8 h (8). Another interesting aspect is the simultaneous gastric and intestinal location that the authors report in these two cases (1), which are very rare findings. The more time elapses since the exposure to a contaminated source with anisakids, the larvae could migrate to the intestine and even perforate it due to the intense parasitism; thus, it is important the early diagnosis to carry out a timely intervention to reduce possible complications, as the ones presented in the cases described (1).

In Spain, only three cases of massive infection by *A. simplex* have been described. One is a male of 66 years with paraplegia in treatment with continuous morphine perfusion, whose infection was associated with the intake of hake inadequately cooked. The patient had three endoscopies, being recorded 20 larvae (7). The second and the third case (1), have motivated this letter; however, the number of larvae has not been specified. In Chile two infected cases have been described, each with 2 *Pseudoterranova* larvae (5).

Japan is the country with more massive infections reports. In a male 58 years old, from the prefecture of Shizuoka (Japan), who presented severe epigastric pain and nausea 8 h after having consumed Sashimi, 56 *A. simplex* larvae were found (8). This is the case with the highest number of larvae reported to this date. In the last three years, 271 (14.2%) cases of gastric anisakidosis, from a total of 1912 cases reported, have been described infected by 2 to 10 larvae. That situation could be associated with the fish infection intensity increment by *Anisakis*

larvae along the coasts of the Japanese province of Kyushu (2).

Outbreaks of massive infection cases reveal that despite infection prevention measures in the commercialization of raw fish, it is still possible the transmission of large number of larvae. It is also important to conduct studies and to implement surveillance protocols in paratenic hosts (fish and cephalopods) in order to identify those with high intensity infection, as well as changes in the infection dynamics, especially during "El Niño" phenomenon, with the objective to orient the control and preventives measures to apply.

Finally, in the epidemiological investigation of FBD outbreaks, parasitic disease by *Anisakis* larvae must be considered as one possible cause, in order to carry out an opportune outbreak intervention.

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