Case Report: Treating Ichthyotoxin Poisoning Induced by Gar Eggs Ingestion

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ABSTRACT

Background: A Gar is a primarily freshwater fish that resides in North America. The flesh of a garfish is edible; however, the eggs and any meat surrounding the eggs are highly toxic to humans. The toxicity is induced by the protein ichthyotoxin.

Case Report: The studied patient was an 18-year-old male who ingested 2-3 spoons full of gar eggs in their residence place. Each spoon full contained 40-50 eggs. The estimated total amount of consumed eggs equaled 3 teaspoons. Approximately one hour after eating the eggs, the patient began to feel unwell. Upon arrival at the local Children's Hospital, the patient was experiencing nausea, vomiting, diarrhea, and sweating.

Conclusion: Patients affected by gar eggs should be treated symptomatically, given there is no antidote or specific treatment for ichthyotoxin. Further research is required on the mechanism that makes ichthyotoxin toxic. Luckily, the presented patient presented no seizures due to the toxin and the care providers could manage the related symptoms.

1. Background

A Gar is a primarily freshwater fish that resides in North America. The flesh of a garfish is edible; however, the eggs and any meat surrounding the eggs are highly toxic to humans. The toxicity is induced by the protein ichthyotoxin. The toxic components in this protein include euglenophycin and prymnesins (prymnesin-1 and prymnesin-2). The toxicity level for humans depends on the amount of the protein or the number of consumed eggs [1]. There is no concrete universal treatment for gar egg ingestion. The available

treatment plans have simply catered to the symptoms of the patient.

2. Case Report

The presented patient was an 18-year-old Caucasian male who ingested 2-3 spoons full of gar eggs in their residence place. Each spoon full contained 40-50 eggs. The estimated total amount of consumed eggs equaled 3 teaspoons. Approximately one hour after eating the eggs, the patient began to feel unwell. Upon arrival at the local Children's Hospital, the patient was experiencing nausea, vomiting, diarrhea, and sweating. His

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vital signs were notable for tachycardia and labs were notable for leukocytosis (18.79k/uL) and lactic acidosis (4.2mmol/L). The patient was admitted to the critical care unit. The patient's inpatient course was not complicated. The patient was treated with antiemetics and fluids. Besides, the patient was able to be discharged the next day.

3. Discussion

Gar eggs contain the toxin ichthyotoxin. Exposure to ichthyotoxin could present with symptoms of nausea, headache, vomiting, diarrhea, dizziness, thirst, tachycardia, hypotension, seizure, and rarely death. Antiemetics are effective in treating nausea and vomiting. Intravenous fluids are used to replace the fluids losses from vomiting and diarrhea. In the case of our patient's symptoms, specific therapies were sufficient.

Multiple details concerning the toxicity of garfish roe (eggs) remain unrecognized. The exact mechanism of toxicity remains unelucidated and similar toxins have varying mechanisms of toxicity. Most of the modern literature on gar toxicity are anecdotal accounts by patients and isolated case studies. Although there is a knowledge gap in gar ichthyotoxin, there are numerous other species of fish with poisonous roe. The cabezon and the northern blenny are common fish that closely resemble the gar and its toxicity [2]. The cabezon and northern blenny roe produce almost identical symptoms as gar roe when ingested. These fish owe their toxicity to a poisonous phospholipid, called dinogunellin, i.e., found in cabezon, and northern blenny, roe [3]. Ingesting dinogunellin causes hemolysis and local mucosal irritation along with symptoms gar eggs are known for. It is possible that gar roe also contains this toxic phospholipid or one similar to it.

4. Conclusion

Patients affected by gar eggs should be treated symptomatically given the lack of antidote or specific treatment for ichthyotoxin. Further research is required on the mechanism that makes ichthyotoxin toxic. Luckily, the studied patient presented no endure seizures from the toxin and the care providers could manage his symptoms.

Ethical Considerations

Compliance with ethical guidelines

Informed Consent was obtained from the patient.

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Author's contributions

All authors contributed in preparing this article.

Conflict of interest

The authors declared no conflict of interest.

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