Chronic Esophagitis and Gastritis After Ingestion of Box Jellyfish (Class Cubozoa)

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Abstract

*This is a case report of chronic esophagitis and gastritis following the ingestion of box jellyfish (*Alatina alata*) by a 12-year old boy with severe autism spectrum disorder and pica. Biopsies taken at esophagogastroduodenoscopy at two months post ingestion revealed histological evidence of esophagitis and gastritis, which resolved after treatment with H2 receptor agonist and proton pump inhibitor.*

Keywords

Adolescent, Autism, Esophagitis, Gastritis, Ingestion, Jellyfish, Pica

Abbreviations

ED = Emergency department
EGD = Esophagogastroduodenoscopy
H. pylori = *Helicobacter pylori*
IV = Intravenous
MRA = Magnetic resonance angiography
PPI = Proton pump inhibitor
SBFT = Small bowel follow through
UGI = Upper gastrointestinal series

Introduction

Jellyfish envenomation is a common event in coastal waters with more than 200 reports annually to the National Poison Data System and many more unreported.[1] The most common and frequent symptoms are pain and skin reaction.[2] Mortality is rare with marine animal and plant envenomation accounting for one death over an eight year period in the United States. Marine and plant envenomation fatalities are a small fraction of the total fatalities caused by all venomous animals which is about 50 deaths annually.[3] Almost all jellyfish envenomations occur by cutaneous contact. A literature review found no reports of uncooked jellyfish ingestion, and only two reports of anaphylaxis after cooked jellyfish ingestion.[4-6] This is a case report of human ingestion of a venomous jellyfish. Ingestion resulted in acute angioedema, followed by several months of esophagitis and gastritis treated with an H2 receptor antagonist, then transitioned to a proton pump inhibitor (PPI). Studies including esophagogastroduodenoscopy (EGD) with biopsies, upper gastrointestinal radiograph series with small bowel follow through (UGI with SBFT), abdominal ultrasound, and abdominal magnetic resonance angiography (MRA) of abdomen all occurred due to severity and persistence of symptoms. Ingestion was also complicated by constipation treated with polyethylene glycol. Pica is a disorder of recurring non-food ingestion, and it occurs more frequently in patients with autism.[7] Consent for publication was obtained from the mother of the patient in accordance with the principals outlined in the Declaration of Helsinki.

Case Presentation

A 12-year old nonverbal boy with severe autism spectrum disorder and pica ingested a jellyfish. Ingestion was witnessed by his behavioral aide while they were free diving at White Plains Beach on O‘ahu. The patient was swimming with his behavioral aide when he grasped and ingested a small jellyfish while freediving with only a mask and no snorkel or other breathing apparatus. The patient’s behavioral aide escorted the patient to shore where he and the patient’s mother saw a few small tentacles still protruding from the patient’s mouth. The professional lifeguards as well as the behavioral aide, who is an expert skin diver, identified the jellyfish as *Alatina alata* (Figure 1). This is a venomous box jellyfish (formerly known as *Carybdea alata)* of the class Cubozoa. The patient’s mother described a few linear small red marks on the perioral skin. The mother administered 12.5 mg of oral liquid diphenhydramine about 30 minutes after the ingestion. The patient did not appear to have any concerning symptoms and the family returned home. Prior to the jellyfish ingestion the patient was observed ingesting handfuls of sand from the ocean floor while submerged. The sand ingestion was a new behavior discovered on the same day.

Approximately 3 hours-post jellyfish ingestion, the patient complained about mouth pain and was taken to the local emergency department (ED), where his physical examination was notable for glossal edema and difficulty handling his secretions, but without labial edema, tenderness to abdominal palpation, stridor, tachypnea, or dyspnea. He was treated with 25 mg intravenous (IV) diphenhydramine, 125 mg IV methylprednisolone, and 20 mg IV famotidine. However, upon reevaluation 1 hour later in the ED, the patient had difficulty handling secretions with evolving lower labium edema, and evolving maculopapular rash over the mental protuberance. Concern for anaphylaxis and potential upper airway obstruction prompted treatment with intramuscular epinephrine 300 mg. Lower labium edema and the maculopapular rash over the mental protuberance improved and the patient was discharged home. His discharge plan included oral diphenhydramine 37.5 mg every 6 hours, oral famotidine 16 mg every 12 hours, and oral prednisolone 60 mg once a day for 3 days.

After this event the patient had abdominal discomfort for several months. This was attributed to the ingestion and investigated by EGD 2 months post-ingestion that was endoscopically normal while tissue pathology demonstrated esophagitis and chronic gastritis (Figures 2 & 3). Upper gastrointenstinal series with small bowel follow through (UGI with SBFT) did not demonstrate reflux. Oral ranitidine 150 mg daily was started prior to the EGD and continued for 1 week before transition to oral omeprazole 20 mg daily. This was transitioned 4 months post-ingestion to oral lansoprazole 30 mg daily until the repeat EGD 9 months post-ingestion. This EGD was also grossly normal, with histology demonstrating resolution of esophagitis and gastritis (Figures 4 & 5). Alternate etiologies for abdominal discomfort were pursued but unrevealing. UGI with SBFT did not demonstrate reflux or anatomic abnormality to explain his symptoms. The patient was *Helicobacter pylori (H. pylori)* negative and MRA of abdomen was normal.

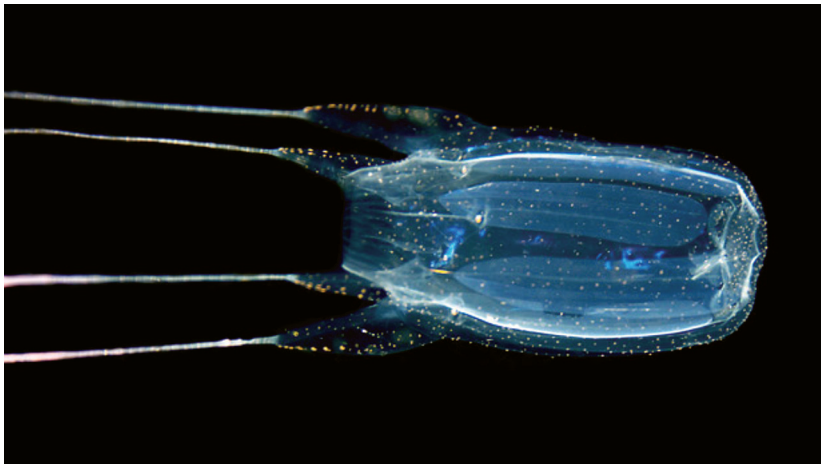

Figure 1. Box Jelly Fish, *Alatina alata*, Size Up to 7.5cm in Height[10]
(Photo courtesy of Waikiki Aquarium, University of Hawai'i, Honolulu, HI)

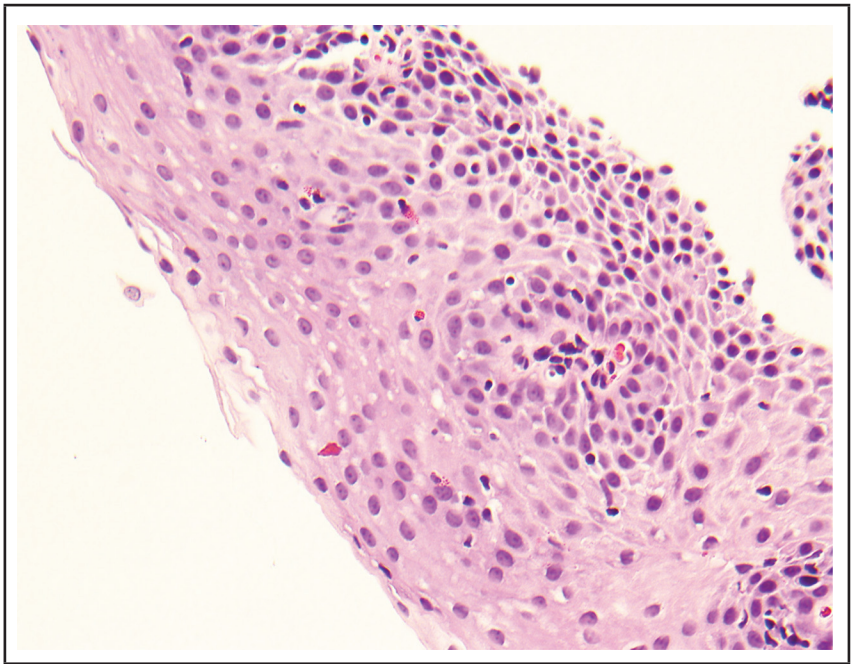

Figure 2. Esophagitis with Scattered Intraepithelial Eosinophils Two Months Post Jellyfish Ingestion

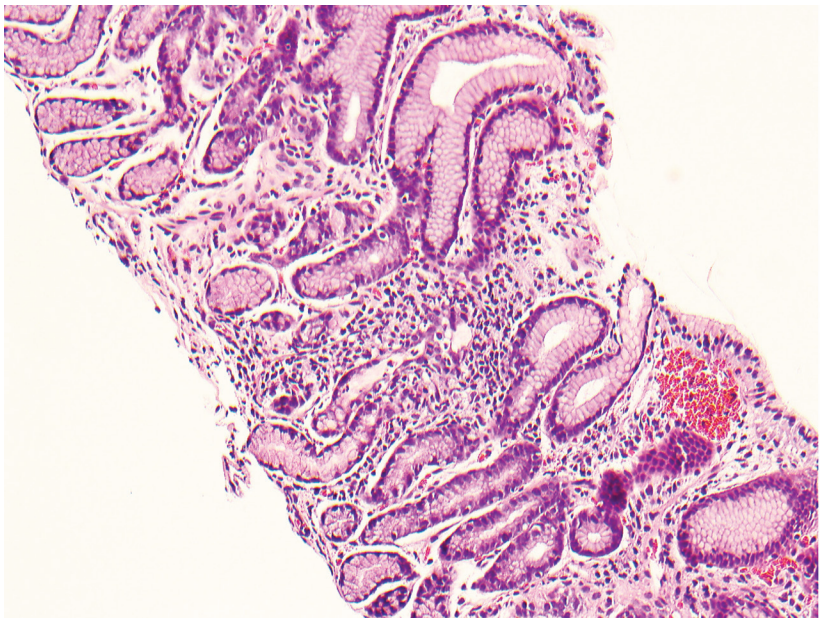

Figure 3. Gastritis with Focal Neutrophilic Infiltrate Two Months Post Jellyfish Ingestion

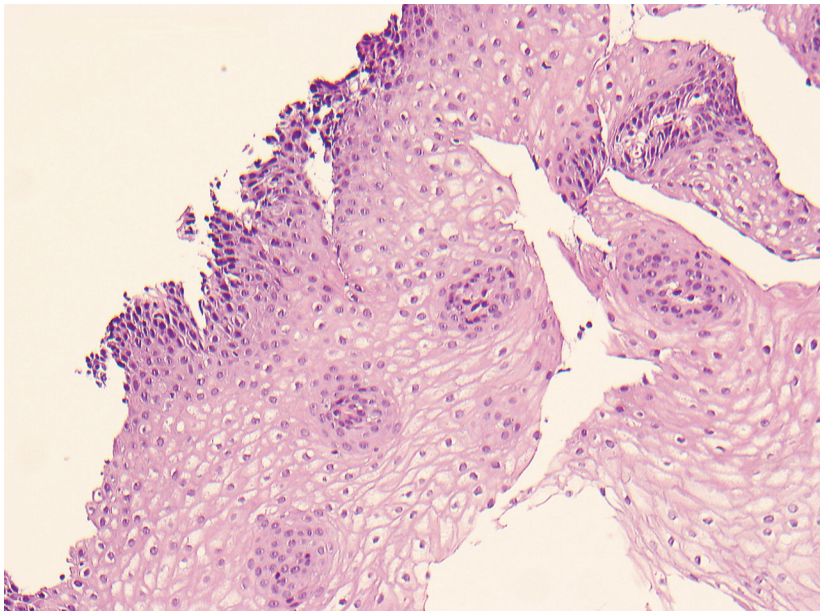

Figure 4. Normal Esophagus Biopsy Nine Months Post Jellyfish Ingestion

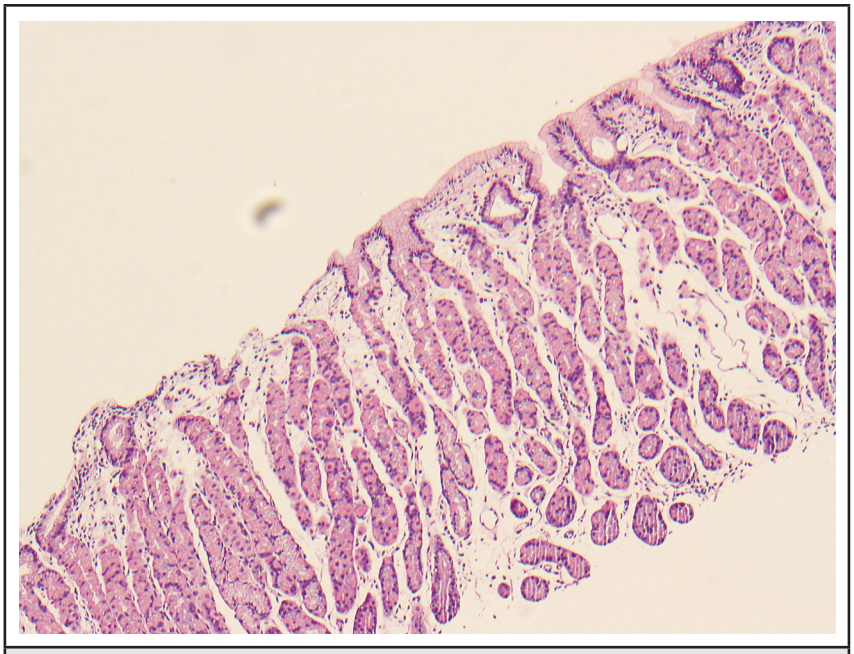

Figure 5. Normal Stomach Biopsy Nine Months Post Jellyfish Ingestion

Discussion

The patient ingested a dangerous venomous animal, likely due to the patient's autism and associated pica. The description of the box jellyfish by the mother and behavioral aide along with and its abundance on the southern shores of O'ahu suggests that the most likely identification of the animal was *Alatina alata*.[8] The team determined that *Alatina alata* ingestion led to chronic esophagitis and gastritis based on tissue pathology at 2 months. They postulated that *H. pylori* was less likely the etiology of the findings given normal UGI, no histology supporting reflux, and negative *H. pylori* test. The patient's chronic esophagitis and gastritis resolved with a long course of PPI. Anaphylaxis and anaphylactoid reactions have previously been described after *Alatina alata* envenomations,[9] consistent with the patient's acute angioedema. Although the patient also frequently ingested so much sand he had significant constipation related to this, it is unlikely that the patient's sand pica led to the findings that the team attribute to *Alatina alata* ingestion.

The views expressed in this manuscript are those of the authors and do not reflect the official policy or position of the Department of the Army, Department of Defense, or the US Government.

Conflict of Interest

None of the authors identify a conflict of interest.

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