WM 3/4/14

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**Ciguatera Poisoning**

**Background**: Ciguatera fish poisoning (CFP) is a syndrome caused by ingestion of the ciguatera toxin, which found is found in tropical reef fish. The toxin is produced by specific species of tropical algae, microscopic critters called dinoflagellates. Small fish eat the algae; bigger fish eat the small fish, and so on. The toxin accumulates in the tissues of the carnivorous fish and approaches clinically significant levels in the larger, longer-lived apex predators.

And we, humans, love to eat reef fish. Common fish implicated are: barracuda, amberjack, mackerel, grouper, snapper, among others.

The toxin is odorless and tasteless. It is heat-stable, unaffected by cooking or *freezing* (this is why it exists in NYC). Contaminated fish exhibit no symptoms.

**Pathophysiology**: The toxin is a voltage-gated sodium-channel blocker. It works at the neuromuscular junction and causes membrane depolarization, neurotransmitter release etc.

**Epidemiology:** Worldwide, there are an estimated 50,000 cases per year. This number is thought to under-represent the true incidence. There is no gold-standard for diagnosis and, in endemic areas, the disease is so common-place that it doesn’t often come to the attention of local- or public-health agents.

**Clinically:** CFP affects three organ systems: GI, neurologic and cardiac. Regional variation appears to produce different symptomatology. In general, the symptoms usually begin 6-12 hours after ingestion of contaminated fish and begin with GI symptoms, including nausea, vomiting, diarrhea, and abdominal pain. These symptoms can last several days. Neurologic symptoms follow ~ 3 days after ingestion and are wide-ranging. The nearly pathognomonic finding is the sensation of temperature reversal, called “cold allodynia” or “cold dysesthesia.” Other neurologic sequellae can include weakness, numbness, dental pain, ataxia, fatigue, among others. These symptoms can last weeks to months. Cardiac sequellae are rarer and include hypotension and bradycardia. The syndrome is very rarely fatal.

**Diagnosis and Management:** There are currently no diagnostic tests available for use in humans, although some are in development. The diagnosis, therefore, is purely clinical and based on symptomatology and exposure to suspect fish. The mainstay of treatment is supportive care. Various agents have been suggested to potentially ameliorate symptoms. Mannitol is the most common agent mentioned as therapy for neurologic symptoms. There are a few RCTs on mannitol therapy for CFP but are weak in their methodology. Gabapentin and TCAs have also been used. There is no good data.

**Summary:** A self-limited illness with often-nonspecific symptoms, and occasionally pathognomonic parasthesias caused by ingestion of contaminated fish. No laboratory diagnosis. Supportive treatment. It happens in NYC.

References:

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