**Ciguatera and Scombroid Poisoning**

Case 1: A 52 year old woman complains of paresthesias in his extremities and peri-oral area. Also, she is concerned because she experiences a painful, burning sensation when she touches cold objects. She had eaten a grouper sandwich 8 hours earlier and developed nausea, vomiting, and diarrhea four hours after ingestion. Upon resolution of her gastrointestinal disturbance she began to notice the neurological symptoms.

Case 2: A 30 year old man begins to experience an intense flushing sensation and redness of his face, neck, and chest about 30 minutes after eating a tuna steak. He is also complaining of crampy abdominal pain and diarrhea.

**Discussion**

These cases demonstrate two different food poisoning syndromes caused by the ingestion of fish. They are *ciguatera poisoning* and *scombroid poisoning*.

**Ciguatera poisoning** is the most common reported fish food poisoning. Ciguatoxin (CTX) is produced by the marine dinoflagellate *Gambierdiscus toxicus*. Dinoflagellates grow on algae and dead coral and are consumed by herbivorous fish. The toxin is concentrated up the food chain as larger predatory fish consume multiple prey fish containing CTX. Large predatory reef fish are commonly implicated in ciguatera food poisoning and include grouper, snapper, barracuda, and seabass.

Symptoms typically appear within four to six hours following ingestion of contaminated fish. However, this time of onset can vary considerably, with symptom onset ranging from several minutes to 24 hours depending on the amount ingested. Symptoms typically resolve within two to five days but some victims will require two weeks to fully recover. Also, a percentage of patients may develop chronic symptoms and experience parasthesias, sensory disturbances, joint and muscle aches and fatigue lasting months. There are rare reports of fatalities due to ciguatera poisoning.

Gastrointestinal complaints usually manifest first, and may include nausea, vomiting and diarrhea. Neurological symptoms follow. Perioral and limb paresthesias and dysesthesias are common. Pruritis, diaphoresis, myalgias, arthralgias, muscle cramps and weakness have all been reported. Often there is a unique phenomenon known as temperature reversal where cold items feel hot. Cold objects are described to cause a painful tingling, a burning discomfort, or an electric shock sensation. In some case cardiovascular symptoms have been reported, including symptomatic bradycardia.
The mainstay of treatment of ciguatera poisoning is supportive care and symptomatic therapy. Patients will often present dehydrated and may have electrolyte abnormalities secondary to vomiting and diarrhea. Symptomatic bradycardia should be treated with atropine. Pruritis can be treated with antihistamines. Mannitol has been considered for the treatment of neurological symptoms. This practice has been supported by many reports of successful use in the past and its mechanism is supported by several experimental papers. However, the only randomized trial testing the efficacy of mannitol was unable to show benefit from its utilization. The recommended mannitol dose is 1 gm/kg intravenously. Because of the vomiting and diarrhea caused by ciguatera, it is essential to assure adequate rehydration and correction of any electrolyte imbalance before considering administration of mannitol.

**Scombroid poisoning** occurs after ingestion of fish that has accumulated scrombotoxin secondary to spoilage. The fish associated with this toxicity are dark fleshed containing large amounts of the amino acid histidine. Scombroid food poisoning develops when an individual ingests improperly refrigerated fish where bacteria have converted histidine into histamine and histamine like substances. It is commonly misdiagnosed as an allergic reaction.

Fish commonly implicated include those in the *Scombroidae* and *Scomberesocidae* families, such as tuna, mackerel and bonito. Non-scombroid fish, such as bluefish, mahi-mahi, anchovies, sardines, swordfish, and escolar have been reported to cause this syndrome.

Patients who ingest scombroid will develop symptoms within an hour. The signs and symptoms of a histamine reaction: flushing, erythematous and/or urticarial rash, headache, dizziness, crampy abdominal pain, nausea, vomiting, diarrhea, shortness of breath and wheezing. In severe cases, it can lead to hypotension and even hemodynamic collapse. The ingested causative fish usually does not smell or taste spoiled, but the victims often report an unusual peppery or metallic taste.

The cornerstone of treatment is with antihistamines. Intravenous H1 and H2 blockers (e.g., diphenhydramine and ranitidine, respectively) should be administered. Bronchodilators (e.g., albuterol) can be helpful if the patient experiences bronchospasm. Severe cases with hypotension and respiratory distress will require aggressive treatment with intravenous fluids, airway control and possibly epinephrine. Scombroid poisoning is a self limited illness; symptoms typically resolve within 12 hours.

Although these syndromes are encountered infrequently in our area, it is important to be aware of the clinical manifestations and treatment options. It is also important to recognize such sentinel cases so that the appropriate health department officials can be notified to prevent a potential outbreak.

If questions arise on this or any other poisoning, the medical staff at the Blue Ridge Poison Center would happy to assist. Free medical consult is available 24 hours a day, every day: 1-800-222-1222. (Healthcare providers may also use 1-800-451-1428.)