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Seven Patients Diagnosed with Scombroid Poisoning — Alaska, Summer 2019

Background

Scombroid is caused by eating fish that has not been properly refrigerated or preserved and therefore contains high levels of histamine (i.e., “scombrototoxin”). Symptoms typically have a rapid onset (within 10–60 minutes of consumption) and resemble an allergic reaction. Symptoms may include flushing of the face and upper body, severe headache, palpitations, itching, blurred vision, abdominal cramps, and diarrhea.¹ Untreated, symptoms usually resolve within 12 hours but may last up to 48 hours.¹ Rarely, there may be respiratory compromise, malignant arrhythmias, and hypotension requiring hospitalization.¹

Histidine present in fish tissue is converted to histamine by bacterial overgrowth in fish that have been inadequately cooled after capture. Certain species of fish naturally have more histidine in their tissue than others and are more frequently associated with scombroid poisoning. These species include members of the *Scombridae* family, such as tuna, bonito, and mackerel, and other saltwater darker-meat fish such as mahi-mahi.² Salmon are not typically associated with scombroid poisoning, although it has been reported. Of the 1,555 cases of outbreak-associated scombroid poisoning reported to the U.S. Centers for Disease Control and Prevention from 1998 to 2017, 11 were associated with salmon.³ Fish contaminated with scombrototoxin may have a peppery, sharp, “bubbly”, or salty taste.

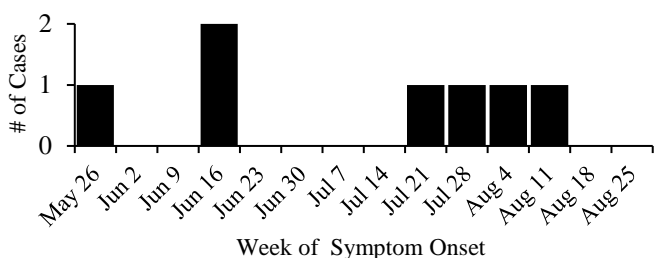
Prevention of scombroid relies on preventing bacterial overgrowth by promptly and consistently cooling fish prior to consumption. Scombrototoxin is not destroyed by freezing, cooking, smoking, curing, or canning.

Reports of scombroid in Alaska have been infrequent; only five cases were reported to the Section of Epidemiology (SOE) during 2015–2018. Scombroid is likely under-recognized because symptoms resemble an allergic reaction and there is no clinical test to confirm the diagnosis. When clustering of cases occurs, this helps to exclude fish allergy as the cause of symptoms.⁴

Case Reports

During May–August 2019, SOE identified seven persons diagnosed with scombroid (Figure). Patients were identified through a variety of means, including consumer complaint (n=1), syndromic surveillance (n=4), and clinician reports (n=2). Patients were all adults (age range: 33–58 years); four were female. Five patients were Alaska residents; two were visiting tourists. All patients sought care at Alaska emergency departments.

Figure. Scombroid Cases by Week of Onset — Alaska, 2019 (N=7)



Medical records reviews were conducted for all patients. Three patients were interviewed. Patients reported consuming the following fish immediately prior to illness onset: salmon (n=4), catfish (n=1), and single-serving foil packets of tuna (n=2). While no leftovers were available, packets of tuna purchased at the same time as the implicated packet were obtained from one patient. Time from fish consumption to onset of symptoms ranged from 5 minutes to 2 hours; time to onset was not able to be determined for one individual. Symptoms are described in the Table. To the best of our knowledge, all patients recovered without complications.

Table. Signs and Symptoms of Seven Scombroid Poisoning Patients – Alaska, Summer 2019

Sign/Symptom	Percent (#) Experiencing
Dizziness	71% (5)
Rash	71% (5)
Itching	57% (4)
Nausea	57% (4)
Abdominal pain or cramping	43% (3)
Flushing	43% (3)
Headache	43% (3)
Shortness of breath	29% (2)
Diarrhea	29% (2)
Heart Palpitations	14% (1)
Syncope	14% (1)
Wheezing/throat tightness	14% (1)

Discussion

An unusually high number of reports of scombroid poisoning were identified during the summer of 2019. The cases occurred in patients who consumed different species of fish from different sources throughout the summer, indicating that this was not a result of a common-source outbreak. The reason for the unusual number of scombroid cases this year is unknown.

None of the fish products associated with the illnesses described here are typically associated with scombroid poisoning. Salmon is very rarely linked to scombroid poisoning events. While tuna is associated with scombroid poisoning, commercial shelf-stable packets have federal oversight and processing standards that should protect consumers against scombroid. Fish testing was not available for most cases, so it is unknown whether the associated fish products had elevated histamine levels, and alternative causes of illness cannot be ruled out. Instances where the patient consumed commercially-processed fish were reported to the U.S. Food and Drug Administration (FDA). FDA tested the tuna packets from one patient’s home for scombrototoxin and found no evidence of elevated histamine.

It is unclear why only two of the seven cases were reported to SOE. Possibilities include ambiguity around the diagnosis, lack of awareness that scombroid is reportable, or forgetting to report.

Recommendations

1. Persons catching, purchasing, storing, and preparing fish should promptly cool and maintain fish meat at a temperature of $\leq 40^{\circ}\text{F}$; toxic levels of histamine can accumulate in several hours in fish stored at $\geq 45^{\circ}\text{F}$ (7.2°C).⁵
2. Clinicians should consider scombroid in patients with compatible symptoms who have recently consumed fish, especially tuna, mackerel, mahi-mahi, sardines, anchovies, herring, bluefish, amberjack, and marlin.
3. Clinicians should report suspected cases of scombroid poisoning to SOE at (907) 269-8000.
4. Patients experiencing symptoms of scombroid poisoning should immediately consult their health care provider.

References

1. CDC. Travelers’ Health. Food poisoning from marine toxins. Available at: <https://wwwnc.cdc.gov/travel/yellowbook/2020/preparing-international-travelers/food-poisoning-from-marine-toxins>
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