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Paralytic Shellfish Poisoning Strikes Kodiak

Between May 25 and June 15, 1994, the Section of Epidemiology received reports of seven outbreaks of paralytic shellfish poisoning involving 16 people on Kodiak Island. The outbreaks occurred at Kalsin Bay, Mayflower Beach, Monashka Bay, Old Harbor (2), Mission Beach, and Kaingnak Bay. Four outbreaks involved mussels, two involved butter clams, and one involved cockles. Three patients required mechanical ventilation and another died.

Case history, patient A

On May 25, 1994, a 28-year-old non-English-speaking male consumed over 50 raw mussels from a beach on Kalsin Bay. Approximately 1-1½ hours after eating, he developed nausea and vomiting; two friends who had also consumed mussels (one of whom developed mild symptoms) brought the patient to the Kodiak Island Hospital. The patient subsequently developed dysarthria, dysphagia, and ataxia. Prior to examination by a physician and 2 hours after consumption of mussels, he collapsed and became apneic and cyanotic. Following intubation with an endotracheal tube, physical examination showed the patient to be afebrile with a blood pressure of 244/131, and heart rate of 135/minute. He had sluggishly reactive pupils, absent deep tendon reflexes, and he did not respond to voice commands.

During a neurologic examination 4 hours after respiratory arrest, the patient remained unresponsive with absent deep tendon reflexes, his pupils were fixed and dilated, he had no facial grimace with a cotton swab applied to the nasopharynx, no response to finger nail compression, a negative dolls eyes maneuver, and negative Babinski, cremasteric and abdominal reflexes.

Five hours after intubation, and 8½ hours after consumption of mussels, the patient was noted to be spontaneously moving his toes. Thirty minutes later, during preparation for transport to Providence Hospital in Anchorage, the patient started opening his eyes spontaneously and breathing against the ventilator. His endotracheal tube was removed at Providence Hospital 11 hours later and he was discharged to home the following morning with no physical impairments.

Case history, patient B

On May 29, 1994, a 61-year-old female consumed at least 10 mussels from a beach at Old Harbor. One hour later she developed paresthesias, vomiting, weakness, and ataxia. She was brought to the health clinic where 15 minutes later she had a respiratory arrest. An oral airway was inserted and she was given oxygen and ventilated with a bag and mask. Assisted ventilation was hampered, however, by frequent vomiting. After emergency transport provided by the Coast Guard, she arrived at Kodiak Island Hospital apneic and with a cardiac rhythm consistent with asystole or coarse ventricular fibrillation. Efforts to resuscitate the patient did not succeed; she was pronounced dead approximately 6 hours after she had consumed mussels. The patient's daughter stated that 3 days prior to her death, the patient had consumed mussels and developed perioral paresthesias.

Environmental investigation

Mussels collected from Chiniak Bay and Old Harbor had 18,684 and 19,418 µg of toxin/100 grams of shellfish tissue, respectively (acceptable level, <80 µg/100 gms of shellfish).

Discussion

These are two of the most dramatic examples of paralytic shellfish poisoning which have occurred in Alaska. Typically, patients with PSP present with perioral paresthesias within 5 minutes to several hours after consuming shellfish. Complaints of nausea and vomiting occur in approximately 40% of patients. Less commonly, patients develop ataxia, dizziness, a floating sensation, dry mouth, diplopia, dysarthria, or dysphagia. The most severe cases progress to weakness and paralysis of extremities, and respiratory arrest. Physical examination may reveal hypertension, general or bulbar paresis or paralysis, and absent or diminished reflexes. **People who develop symptoms after consumption of shellfish should report immediately to the nearest health care facility.**

While no specific therapy exists, **rapid diagnosis and initiation of supportive care can be life saving.** Generally, symptoms resolve within 12 hours, and almost all patients are asymptomatic after 24 hours. Symptoms do not relapse.

The toxin levels demonstrated during this outbreak are the highest ever recorded in Alaska. Following intoxication, shellfish may retain paralytic shellfish poison for an extended period. Butter clams in particular have been shown to retain toxin for up to 2 years. Because of this, and because the Section of Epidemiology has documented outbreaks of PSP during all seasons and with many types of shellfish, **shellfish collected from uncertified beaches in Alaska should not be eaten.**

Recent advances in diagnostic procedures may allow toxin detection in the urine or blood of patients. We have arranged with the U.S. Food and Drug Administration to test specimens sent to or collected by the Section of Epidemiology. **Health care providers should report IMMEDIATELY all suspected cases of PSP to the Section of Epidemiology at 561-4406.** Specimen collection and shipping procedures will be arranged with the Section of Epidemiology.

We thank the staff of Kodiak Island and Providence Hospitals, the Old Harbor Health Clinic, and the Alaska Department of Environmental Conservation for their assistance with this investigation.

(Contributed by Brad Gessner, M.D., Section of Epidemiology)