H11 Paralytic Shellfish Poisoning Resulting From the Consumption of Shellfish From a Beach in Alaska

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Learning Overview: The goal of this presentation is to make attendees aware of an unusual form of poisoning with neurologic symptoms that can be seen through the consumption of non-commercially obtained shellfish.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by informing attendees that there is a need for monitoring systems to be put in place for the detection of specific neurotoxins that can arise in shellfish in various locations in coastal communities

This is a case report of a fatal case of a 62-year-old female whose death is attributed to paralytic shellfish poisoning. The woman and her family harvested blue mussels and dogwinkle snails from a beach in Dutch Harbor, AK, on July 4, 2020. After cooking the shellfish, she and her family ate them. The other members ate less than the patient. Approximately four hours later, she developed numbness, tingling in her fingers, a floating sensation, and began to vomit. Two hours later, she developed numbness from the mouth to the hands with neck and back pain. On the arrival of emergency personnel, she was suspected of having a stroke and was transported, where upon admission, she developed abnormal heart rhythm with bradycardia with subsequent cardiopulmonary arrest. The decedent's other medical history included hypertension and diabetes type 2. Given the history of exposure to personally harvested shellfish and the unusual symptoms, testing for paralytic shellfish poison was requested. Samples of the mussels, dogwinkles, and stomach contents from the postmortem examination were sent to the Alaska Department of Environmental Conservation's (ADEC) Environmental Health Laboratory (EHL). The EHL analyzed the samples using Ultra-Pressure Liquid Chromatography (UPLC) with Post Column Reaction (PCOX)and yielded the following results: dogwinkles at 287ng Saxitoxin (STX) equivalents/100g of tissue, blue mussel at 11,200ng STX-eq/100g, stomach contents at 50.2ng STX-eq/100g. For reference, the Food and Drug Administration (FDA) requires product for commercial sales to be less than 80ng STX-eq/100g. The cause of death, determined to be paralytic shellfish poisoning, was supported with the trifecta of results from the consumed product: the high level of toxicity in the stomach hours after consumption, vomiting, and the detections of five Paralytic Shellfish Toxin (PST) congeners in the urine. Unlike other states, Alaska does not perform routine monitoring of non-commercial harvesting areas, Alaska has no personal use beach monitoring programs and does not restrict personal harvesting of shellfish, which is a risky decision. Future monitoring for these potentially deadly toxins in shellfish can prevent such death and/or injury in the future.

Paralytic Shellfish Poisoning, Saxitoxin, Neurotoxin

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