



Pathology Biology Section – 2009

G32 Chloride Levels of Sphenoid Sinus Fluid in Salt and Fresh Water Drownings on the Island of Oahu, Hawaii

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After attending this presentation, attendees will walk away with better knowledge of how chloride levels of sphenoid sinus fluid can help support pathologist's diagnosis of drowning as the cause of death.

This presentation will impact the forensic community by broadening research about chloride levels of sphenoid sinus fluid in salt and fresh water drownings.

There are many potential criteria to be evaluated in the pathologist's diagnosis of drowning as the cause of death. One of these involves the analysis of the sphenoid sinus fluid. In the drownings reported from the island of Oahu, Hawaii, chloride levels of sphenoid sinus fluid in salt water drownings are typically greater than 140 mmol/L and for fresh water drownings they are normally less than 65 mmol/L, however, to date there has been little research on the topic. During July 2007 through July 2008, there were 37 drownings reported on the island of Oahu. Nineteen of these had sphenoid sinus fluid removed and analyzed for the chloride content, 14 salt water and five fresh water. Eight of the 14 salt water cases had the expected chloride readings of greater than 140 mmol/L. Due to specific circumstances, including decomposition, the other six presented different results. Of the five fresh water cases, two presented the expected chloride levels of less than 65 mmol/L, while three had concentrations greater than 65 mmol/L. Of these, two were recovered from chlorinated swimming pools. Other factors that must be taken into consideration for all cases include: time elapsed between death/discovery of the individual and collection of samples; and hospitalization following discovery with death occurring later during hospitalization.

Drowning, Sphenoid Sinus Fluid, Chloride Level