



Pathology/Biology Section - 2014

G28 Subdural Hemorrhage as Postmortem Artifact: Characterization of Non-Traumatic Subdural Hemorrhages Identified at Autopsy

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After attending this presentation, attendees will be knowledgeable about a series of cases of presumed artifactual postmortem subdural hemorrhage. Attendees will also recognize artifactual postmortem subdural hemorrhage and understand the factors associated with the development of such collections.

This presentation will impact the forensic science community by characterizing postmortem subdural hemorrhages, thereby allowing their distinction from antemortem subdural hemorrhages.

Because subdural hemorrhage is typically associated with traumatic head injury, recognition of artifactual postmortem subdural hemorrhage and the characteristics that distinguish it from true antemortem injury is critical for the accurate classification of cause and manner of death. In this presentation, cases of presumed artifactual postmortem subdural hemorrhage are presented and compared to a group of controls.

Cases were defined by the following characteristics: (1) no gross or microscopic evidence of organization; (2) no history of trauma; (3) no evidence of impact sites to the head; (4) no pre-existing organized subdural collections; and, (5) no parenchymal brain hemorrhages or other intracranial lesions. To characterize these hemorrhages, the following information was collected: volume and location of hemorrhage; basic decedent demographic information; cause and manner of death; body position when found; location and degree of lividity at autopsy; underlying medical conditions; brain weight; postmortem interval; and body temperature. To further assess potential factors associated with the development of artifactual postmortem subdural hemorrhage, cases were compared to a control group of 50 decedents without subdural hemorrhage. Controls were randomly selected from decedents with a non-traumatic cause of death performed at the Harris County Institute of Forensic Sciences between July 1, 2012, and June 30, 2013; individuals with intracranial pathology were excluded from the control group.

Ten cases of presumed postmortem artifactual subdural hemorrhage were identified; none were space-occupying and all consisted of thin films over one or both of the cerebral convexities. The cases had the following characteristics: age range of 1 month to 64 years (median: 46.5 years); male gender in 7/10; history of chronic alcoholism in 6/10; hypertensive and/or atherosclerotic cardiovascular disease in 6/10; median brain weight of 1,465 grams; average body temperature at scene of 82.6°F; and average time from last-known-alive to autopsy of 51.7 hours. The control group had the following characteristics: age range of 11 months to 90 years; male gender in 36/50; history of chronic alcoholism in 11/50; hypertensive and/or atherosclerotic cardiovascular disease in 39/50; median brain weight of 1,350 grams; supine body position in 5/10; average body temperature at scene of 87.9°F; and, average time from last-known-alive to autopsy of 28.6 hours. Statistically significant differences observed between cases and controls were the average time from last-known-alive to autopsy (51.7 hours versus 28.6 hours) and history of chronic alcoholism (60% versus 22%).

Artifactual postmortem subdural hemorrhage is a previously undescribed entity. The results of this study suggest that small, non-space-occupying subdural hemorrhages can occur after death. Given the observed association with increased postmortem interval, it is likely that these hemorrhages occur as a result of postmortem breakdown of vasculature in the subdural space, akin to Tardieu spot formation in the skin.

Subdural Hemorrhage, Postmortem Artifact, Case-Control Study