



H66 Quantifying Physiologic Macrophages and Hemosiderin in the Dura Mater of Infants

*Alison Krywaczyk, MD**, University of Vermont Medical Center, 111 Colchester Avenue, Burlington, VT 05401; and *Elizabeth A. Bundock, MD, PhD*, Vermont OCME, 111 Colchester Avenue, Burlington, VT 05401

After attending this presentation, attendees will have an appreciation for the presence and distribution of macrophages and hemosiderin in infant dura mater under normal physiological circumstances. This will prevent misclassifying these macrophages as evidence of a three- to-four-day-old subdural hemorrhage in infants who demonstrate subdural hemorrhage at autopsy.

This presentation will impact the forensic science community by being one of the largest studies to microscopically examine non-traumatized infant dura mater and to directly focus on quantifying macrophages and hemosiderin and their distribution. Many other studies have described the features of evolving subdural hemorrhage; however, without well-defined characteristics of normal infant dura mater, it can be difficult to interpret the pathological significance of macrophages and hemosiderin when attempting to date a subdural hemorrhage. By defining the amount and distribution of macrophages and hemosiderin present under physiologic conditions, their significance in the context of subdural hemorrhage can be better understood.

Subdural hemorrhage is an important cause of mortality related to both accidental and homicidal injuries in infants and neonates. For medicolegal purposes, the ability to accurately estimate the age of a subdural hematoma at autopsy is of great interest. The first appearance of pigment-laden macrophages histologically is often referenced as evidence that the subdural hematoma is three to four days old; however, while the histologic features of evolving subdural hemorrhages are well described in the literature, the histologic features of normal, non-traumatized infant dura mater are not well defined. Further complicating the problem is that macroscopically normal infant dura mater, is not commonly examined histologically, and in contrast to adult dura mater, is more cellular and may contain macrophages. In order to accurately interpret the pathologic significance of macrophages, it is necessary to be aware of the number and distribution of macrophages present under physiologic circumstances.

This study examined the amount and distribution of pigment-laden macrophages present in 18 samples of dura mater taken at autopsy from infants without gross evidence of subdural hemorrhage or subdural neomembrane. Immunohistochemical staining with CD68 and staining with Prussian blue iron was performed to highlight macrophages and hemosiderin. The amount and distribution of macrophages and hemosiderin present in the macroscopically normal dura mater was then compared to 11 samples of dura mater taken at autopsy from infants with subdural hemorrhage or neomembrane.

Subdural Hemorrhage, Infant, Dura Mater