G131 Routine Postmortem Cultures in Infant Autopsies: A Four Year Experience

Kristin C. Escobar Alvarenga, MD, 4519 Stallion Brook, Spring, TX ; and Merrill O. Hines, MD, Mary L. Anzalone, MD, and Kathryn H. Haden-Pinneri, MD, Harris County Institute of Forensic Pathology, 1885 Old Spanish Trail, Houston, TX 77054*

After attending this presentation, attendees will determine the value and effectiveness of learning routine postmortem cultures on infant autopsies and appreciate the importance of correlating postmortem culture results with gross and microscopic autopsy findings.

This presentation will impact the forensic science community by improving knowledge of the utility of postmortem cultures and by redefining roles of routine postmortem cultures on current protocols for infant autopsies.

A comprehensive infant autopsy not only includes an external and internal examination, but also many ancillary diagnostic tests including postmortem cultures, radiology, toxicology, histology, and metabolic studies. Each of these components may contribute to some degree in determining a cause of death. The purpose of this study is to specifically examine the relative contribution of routine postmortem cultures in establishing a cause of death in infant autopsies.

Postmortem cultures have long been regarded as an area of contention in the field of forensic/autopsy pathology and microbiology. There is no doubt that postmortem cultures not only provide epidemiological information for public health purposes but also play an integral role in helping to establish a specific cause of death in some cases. However, due to postmortem contamination, postmortem cultures can be difficult to interpret.

Bacterial cultures of blood, lung, spleen, and cerebrospinal fluid as well as viral cultures from the respiratory tract are routinely collected using sterile instruments on the majority of infant autopsies at the Harris County Institute of Forensic Sciences. The results of routine postmortem cultures from 304 infant autopsies ranging from 1 to 365 days of age over a four year period (2008 – 2012), presented with sudden unexpected deaths of previously healthy infants and without gross anatomic abnormalities or evidence of infection were analyzed. Data is available fpr 295 blood cultures, 299 lung cultures, 290 spleen cultures, 255 cultures of cerebrospinal fluid, and 238 viral cultures.

The data shows that the cause of death was determined to be infectious in 12 out of 304 pediatric autopsies (4%). In these autopsies with an infectious cause of death, eight of these cases had a positive postmortem culture and histologic correlation with the cultured organism; four had a negative postmortem culture with histologic evidence of infection. Out of autopsy cases with an infectious cause of death, five of the 12 viral cultures from the respiratory tract and none of the bacterial cultures of cerebrospinal fluid successfully isolated an organism that contributed to the cause of death.

Two hundred and twenty-one out of 304 pediatric autopsies (73%) were classified as sudden infant death syndrome or undetermined (co sleeping); 157 of these cases had a positive postmortem culture without histologic evidence of infection (postmortem contamination). The postmortem interval, like previous studies have shown, did not have a significant impact on the results of the postmortem cultures.

In conclusion, routine postmortem cultures will fail to identify a definitive cause of death in a significant proportion of pediatric autopsies that present with sudden unexpected deaths of previously healthy infants and with no gross anatomic abnormalities or evidence of infection at autopsy. Lastly, the high postmortem contamination rate complicates the interpretation of postmortem culture results.

Culture, Infant, Autopsy

 ** Presenting Author*