G100 Infant Position and the Assessment of Risk Factors for Asphyxia: A Review of 209 Sudden Unexpected Infant Deaths

Melissa A. Pasquale-Styles, MD, Wayne County Medical Examiner Office, 1300 East Warren Avenue, Detroit, MI 48207; Patricia L. Tackitt, RN, MS, Michigan Public Health Institute, 2438 Woodlake Circle, Suite 240, Okemos, MI 48864; and Carl J. Schmidt, MD, Wayne County Medical Examiner Office, 1300 East Warren Avenue, Detroit, MI 48207*

After attending this presentation, attendees will understand the importance of a scene investigation, preferably with reenactment using a doll, in identifying the risk factors for asphyxia in a sudden, unexpected infant death.

This presentation will impact the forensic community and/or humanity by demonstrating how historically, the investigation of an infant death has focused predominately on autopsy and microscopic findings with little understanding or consideration of the risk factors for asphyxia at the scene. Since most infant autopsies are negative for significant disease or injury, many of these have traditionally been called sudden infant death syndrome (SIDS). Even in some cases where asphyxia was strongly suspected at the scene, such findings have been ignored in favor of a SIDS diagnosis or cause of death based on some evidence of natural disease at autopsy such as a respiratory tract infection. By ignoring risk factors for asphyxia in many cases, pathologists have missed emphasizing a major cause of sudden infant death through the years.

At the Wayne County Medical Examiner Office in Detroit, Michigan, from 2001 to 2004, scene investigations were performed on 209 sudden and unexpected infant deaths, ages 1 day to 12 months. This included a follow-up visit, usually performed by a public health nurse. A reenactment of the position of the infant's body when found using a doll took place in all except 7 scenes where parents refused or a doll was unavailable. The 209 cases were reviewed to assess the position of the infant at the time of discovery and identify the common risk factors for asphyxia including bed sharing, overlay, wedging, strangulation, and prone position, demonstrated obstruction of the nose and mouth and coverage of the head by bedding. Sixty (28.7%) of these infants died in their cribs, 110 (52.6%) died after being placed to sleep in adult beds, 25 (12.0%) died after being placed to sleep on couches, 5 (2.4%) died in car seats and 9 (4.3%) died in miscellaneous other locations. Conclusive evidence of asphyxiation including witnessed overlay, wedging, or strangulation was established in 27 cases (12.9%). Bed sharing occurred in 114 deaths (54.5%). An infant position with demonstrated complete obstruction of the nose and mouth upon discovery was shown in 64 cases (30.6%). Prone positions on soft bedding +/- partial obstruction of the airway, general prone position, and/or coverage of the head by bedding were documented in 30 cases (14.4%). Overall, one or more risk factors for asphyxia were identified in 178 out of 209 cases (85.2%). Nonspecific criteria which may complicate breathing in an infant with airway compromise were identified in 59 out of 178 infants with asphyxia risk factors (33.1%) and included symptoms of the flu or upper respiratory infection, medication with sedating decongestants, known respiratory complications of prematurity and/or a previously diagnosed medical condition for which they were not exhibiting acute symptoms. Thirty-one of 209 infants (14.8%) had no discernible risk factors for asphyxia. The information gathered at the scene investigation regarding the infant's position at death was completely different from the initial death report in 26 of 209 cases (12.4%) and revealed additional information regarding asphyxia risk factors in 92 cases (44%). Of the 209 infants, the cause of death of 49 (23.4%) was determined to be position-related asphyxia, 35 (16.7%) were natural causes (with pneumonia/airway inflammation and congenital heart disease predominating), 67 (32.1%) were designated sudden infant death syndrome (SIDS), 57 (27.3%) died of indeterminate causes and 1 case was ruled accidental aspiration of food. The increasing awareness in risk factors for asphyxia at the scene has led to a reduction in the diagnosis of SIDS at the Wayne County Medical Examiner Office from 38 in 2000 to 2 in 2004 (94.7% decrease). In this same time period, the diagnosis of position-related accidental asphyxias in the 1-day to 12-month age group increased by 283% from 6 to 17 and indeterminate causes of death increased by 900% from 3 to 27. This study suggests that asphyxia plays a greater role in many sudden infant deaths than has been historically recognized, and a thorough scene investigation with doll reenactment is an effective way to identify the risk factors. A better understanding of the significance of these risk factors is needed so that the causes of many sudden infant deaths can be determined and appropriate preventive measures reinforced.

Sudden Infant Death, Infant Position, Asphyxia

 ** Presenting Author*