



## Pathology Biology Section – 2010

### G4 What Is the Frequency of Finding Lethal Injury When a SIDS-Like Death Is Reported?

M.G.F. Gilliland, MD\*, Brody School of Medicine at East Carolina University, Pathology & Lab Medicine, Brody 7S-10, Greenville, NC 27858-4354

After attending this presentation, attendees will understand how frequently lethal injuries were found in a group of infants less than one year of age initially reported to have been found dead after sleep. Attendees will also understand how important it is to thoroughly investigate infant deaths.

This presentation will impact the forensic science community by providing a scientific basis for the need to perform an autopsy, even if there is parental objection in infant deaths. Attendees will have scientific support for thorough law enforcement investigation of unexpected deaths in infancy.

Sudden unexpected deaths of infants less than a year of age are concerning to families and law enforcement. The frequency of finding evidence of lethal injury when the history is that of Sudden Infant Death Syndrome – child found unresponsive after sleep – is important in determining the extent of investigative effort required.

**Method:** Examination of a database of prospectively studied child death investigations from the Southwestern Institute of Forensic Sciences in Dallas, Texas from 1981-1989 identified 84 infants less than one year of age. These infants were part of a larger study of 169 children less than ten years of age. The deaths were from Dallas city and county

as well as adjacent Justice of the Peace jurisdictions in north central Texas. Investigations included: scene circumstances, medical records, investigative information from law enforcement and social services, autopsies with ocular examinations, toxicologic studies, and radiographs when indicated.

**Results:** SIDS-like histories were reported in 36 of the 84 infants, 42.9% of the total group. Infants with SIDS-like histories were found to have injuries playing a role or causing their deaths in eight cases of this group, 22.2%. Seven of these were attributed to non-accidental injuries when no adequate explanation was provided once internal lethal injuries were found at autopsy. Three of these non-accidentally injured infants had no external injuries. Three others had only small facial or scalp injuries which were concerning in the context of a SIDS-like history. The seventh infant of the non-accidental death group was slightly decomposed and had visible injuries in spite of the SIDS-like initial history. The accidental death occurred in an infant who had sustained a simple skull fracture when his stroller rolled down hill and crashed into a wall three days prior to death. He was treated and released and found unresponsive in the morning. He had a healing small head abrasion. Laryngotracheobronchitis was considered a significant contributing factor in his death.

Seven of the infants' deaths in the SIDS-like history group were ruled undetermined, 19.4%. None of them had external injuries or internal injuries sufficient to cause death and none had sufficient natural disease to account for death.

Sufficient gross and/or microscopic findings to attribute death to natural diseases were found in eight infant deaths. Six died of respiratory tract illnesses and two died of other illnesses for a total of 22.2% of the total group.

The diagnosis of exclusion, SIDS, was reserved for 13 of the infants, 36.1%. None of these infants had any external injuries. At the time of the study the SIDS definition did not include extensive metabolic and radiologic studies. Scene circumstances, medical and social services information, complete autopsy, and toxicologic studies for child deaths between one month and one year of age were used to define SIDS in this study. As has been found in most studies of SIDS deaths, ten of the infants were three months old or less, 76.9%.

	Accidental	Non-accidental	Natural	Undetermined	TOTAL
Head Injury	1	7	0	0	8
Undetermined	0	0	0	7	7
Respiratory	0	0	6	0	6
Other Natural	0	0	2	0	2
SIDS	0	0	1	0	13
	1	7	21	7	36

**Conclusion:** Although more than half of sudden unexpected deaths of infants less than one year of age were attributed to natural causes 15 of the 36 deaths this study (41.7%) required additional law enforcement activity. Non-accidental injuries were found in 19.4% of deaths and a similar percentage could not be attributed to natural causes (undetermined cause and manner). Sudden unexpected infant deaths must be thoroughly investigated; many will be the result of natural causes, but a significant number will be unnatural deaths. Any external injury is an indication that an autopsy must be performed. The absence of



## Pathology Biology Section – 2010

---

external injuries did not accurately predict natural deaths. Autopsies are still necessary to exclude trauma. This study did not address high- resolution radiographic virtual autopsy techniques to allow examination in the face of parental objection to autopsy.

**SIDS, Non-Accidental Injury, Infant Deaths**