



Pathology Biology Section – 2009

G40 How Often is Pre-Existing Disease Found in Child Deaths?

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After attending this presentation, attendees will be able to describe the frequency of finding pre-existing disease in a group of child death investigations and discuss the potential significance of such findings in individual cases.

This presentation will impact the forensic community by demonstrating why the forensic science community needs a scientific basis for comparison of individual cases to a larger group of child deaths when providing information to triers of fact.

Forensic pathologists are often asked whether injured children have pre-existing diseases when discussing findings in death investigations. Commonly the pathologist is then asked to compare individual case findings with findings in a larger population of children. The objective of this study was to review a series of child death investigations and determine the frequency of identifying pre-existing disease in the group.

A prospective study focused on the deaths of 169 of approximately 400 child deaths investigated by the Southwestern Institute of Forensic Sciences (SWIFS) in Dallas, TX from 1981-1989. Investigation of these deaths included information about the circumstances of death or collapse, prior medical and social history, autopsy examination with ocular examination, toxicologic investigation, radiography when indicated, and additional investigations when questions remained. The study has been previously described and included: 19 asphyxial, 80 closed head injury, 13 trunk injury, 13 central nervous system disease, 13 sudden infant death syndrome, 21 other natural deaths, and 10 deaths with undetermined cause and manner. The central nervous system diseases included meningitis, seizure disorders, spontaneous intraventricular and subarachnoid hemorrhages, and a brain tumor. The other natural deaths included respiratory tract illnesses, sepsis, congenital heart disease, myocarditis, a volvulus, and a dehydration death. Demographics were similar to the child deaths investigated at SWIFS: 78% were two years of age and under; 98 were white, 51 black, 16 Latino, and 4 other ancestry. Over half, 59%, were boys. Pre-existing disease was defined as diseases found at autopsy whether the disease contributed to death or not. However, children with diseases resulting from cardiovascular collapse were not included in the pre-existing disease group. Bronchopneumonia, myocardial ischemia, or watershed infarcts were found in some of the children who were well until an injury event occurred. These diseases were considered consequences of the collapse event and not included. Analysis of the data regarding bronchopneumonia has previously been reported for this study population. Review of the 169 deaths identified 60 children with pre-existing diseases and 109 without such diseases.

The group was further subdivided by the mechanism of the immediate cause of death. The distribution of pre-existing disease among unnatural, natural, and undetermined causes revealed:

Manner of Death	Pre-Existing Disease		Total	% of Subgroup with Pre-Existing Disease
	Present	Absent		
Inadvertent	6	30	36	17%
Intentional	16	60	76	21%
Natural	34	13	47	72%
Undetermined	4	6	10	40%

Pre-existing disease was uncommon among injured children. For some of the intentional injury deaths investigation suggested that otitis media or retardation may have been a factor in increasing the caregiver's frustration with the child. The pre-existing diseases did not appear to increase the risk of injury in the inadvertent injury deaths and appeared to be incidental findings. The deaths attributed to natural causes identified diseases sufficient to account for the children's deaths, and, as such, had the greatest frequency of pre-existing disease by the definition used in this study. The 13 with no pre-existing disease included nine of the SIDS deaths which did not have sufficient disease or injury to account for deaths. Review of scene and circumstances, medical records, and search for social service involvement revealed no concerns. In the 1980s such non-suspicious deaths were attributed to Sudden Infant Death Syndrome at SWIFS. The other four natural deaths with no pre-existing disease were diseases resulting from a prior remote injury from which the child had at least partially recovered. Undetermined deaths in this study had neither adequate natural disease nor injury to account for the deaths and suspicious scenes, circumstances, medical records, or social service histories.

Review of a series of child deaths including both natural and unnatural causes and manners of deaths revealed that most natural deaths occurred in children with pre-existing disease and most unnatural deaths occurred in otherwise healthy children. Reporting such findings provides a scientific basis for comparison of individual cases to a larger group of child deaths. **Child Death, Child Abuse, Pre-Existing Disease**