



Pathology Biology Section – 2007

G86 Postmortem Skeletal Survey Use in Pediatric Forensic Autopsies: A National Survey

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The goal of this presentation is to summarize a national survey of postmortem pediatric radiology practice, as reported by forensic pathologists. This will provide an understanding of current practice patterns and factors that may influence the type and extent of radiologic tools that are utilized in the postmortem evaluation of forensic pediatric cases, and introduce possible consideration for future practice including creative funding sources and community resources.

This presentation will impact the forensic community and/or humanity by assisting the forensic pathology community in analysis of how skeletal surveys are defined, and whether the current practices are providing adequate information in cases of unexpected pediatric death and/or suspected child abuse. In addition, it is anticipated that the results will provide suggestions for alternative techniques and resources, as well as creative funding sources in the area of postmortem radiography. Future research should include a cost-benefit analysis of various protocols.

Radiography is an essential tool in the evaluation of suspected physical abuse in the living child. Postmortem radiological evaluation is often included in the autopsy of a child or infant whose death is unexpected or suspicious for abuse. Just as in the living, discovery of subtle injury at autopsy may be dependent upon ancillary studies. Although the pathologist has the advantage of direct examination of the axial skeleton during the postmortem examination, a routine autopsy does not allow for examination of the appendicular skeleton. Dissection of distal extremities, for instance, may not be performed without radiologic studies that direct the pathologist to the location of potential injury. Previous studies have documented injuries such as metaphyseal fractures that were unsuspected on external examination.

According to the recently approved Forensic Autopsy Performance Standards of the National Association of Medical Examiners, "...The Forensic Pathologist or representative shall X-Ray all infants." In addition, in June 2004 a joint statement of the Society for Pediatric Radiology and the National Association of Medical Examiners was published, advocating the use of high quality radiographs in a postmortem child abuse investigation. The recommended appendicular postmortem survey includes a minimum of frontal views of each arm (two films), paired hands (one film), paired legs (one film) and paired feet (one film).

It has been recognized that the use of radiographs as an ancillary study in postmortem examinations is typically routine. The extent of such examinations, however, is not known. In the case of live children, recent studies suggest that in facilities with fewer numbers of pediatric cases, skeletal surveys are used less frequently and tend to include fewer images per study.

A mail survey of pathologist members of the American Academy of Forensic Sciences was distributed throughout the United States and its territories. The target population was pathologists who conduct autopsies on children <36 months of age. There were a total of three mailings, and a \$2 incentive was included with each initial survey sent. The objective of the survey was to (1) assess adherence to the NAME recommendations for postmortem radiography among pathologists conducting forensic autopsies in children <36 months of age, and (2) to describe the spectrum of postmortem skeletal survey practices in a national sample of pathologists. The response rate was 259/470 (55%). Data were analyzed utilizing univariate descriptive statistics.

Respondents reported handling one to approximately 2,000 pediatric cases per year in a given office. Nearly every respondent (99.96%) indicated that they obtained at least some imaging. The number of postmortem images obtained ranged from none to a "babygram" (i.e., one or two frontal films of the entire body) to a set of 19-30 individual films that include multiple views of the axial and appendicular skeleton, to full body MRI or CT scans. Most commonly, films were traditional X-Ray films although fluoroscopy and other techniques were also reported. Nearly one third of the surveyed pathologists reported routine use of the "babygram" as their sole postmortem radiographic tool.

Most surveys are performed on site, at the location of the autopsy laboratory, and most are funded at the expense of the office. Other funding sources included state budgets, grants and insurance billing.

Respondents reported using skeletal surveys most frequently when foul play or abuse is suspected. Not all pathologists utilize postmortem skeletal surveys in cases of presumed Sudden Infant Death Syndrome, or when foul play is not initially suspected.

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