



Pathology Biology Section – 2007

G34 Hanging Deaths in Ontario: Retrospective Analysis of 755 Cases

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After attending this presentation, attendees will gain an appreciation of the demographics and pathology of hanging deaths in Ontario. The findings will be compared to the other series and discussed with regards to influencing factors and quality assurance standards.

This presentation will impact the forensic community and/or humanity by emphasizing the importance of documenting neck injuries in hanging deaths, and will discuss factors influencing their frequency. It will address quality assurance issues, such as an importance of recording of pertinent negatives, use of standardized autopsy reports and dissection protocols, and utilization of additional postmortem techniques.

The frequency of neck injuries in deaths by hanging is controversial. In the literature, the range is wide, varying from 0 to 76.6% for hyoid and laryngeal fractures. Multiple factors account for this variation. Complete neck examination and accurate recording of not only positive but also negative findings are important.

This study is a retrospective analysis of deaths by hanging that happened in Ontario during a two-year period (January 1998 to December 1999). The main goal of the study was to determine the frequency of different hanging-related neck injuries. Fractures of the neck structures and soft tissue injuries were studied. Secondly, factors recognized as important in the incidence of neck fractures, such as age, sex, and weight of the deceased were evaluated. The third goal was to determine whether the frequency of hyoid/laryngeal injuries varied depending on autopsy location, i.e., forensic pathology unit, teaching hospital, or community hospital.

A total of 755 cases were available for evaluation of which 632 had a complete autopsy and 68 were limited to external examination only. In 55 cases, no postmortem examination was conducted. The largest category was suicidal hanging, at 737 cases (97.6%). Nine cases (1.2%) were accidents and two cases (0.3%) were homicides. In seven (0.9%) cases the manner of death was not determined. The mean age of the deceased was 40.58 years (the youngest victim was two and the oldest 94 years old), and there was a male predominance (82.6%). The following represents a breakdown, by location, of the cases that were examined: 240 (34.3%) in forensic facilities (of which 72.9% were complete autopsies and 27.1% were external examinations); 48 (6.9%) in teaching hospitals (of which all were complete autopsies), and 412 (58.9%) in community hospitals (of which only three were limited to external examination).

Of the 632 cases that had complete autopsies, the most common hanging related neck injuries were those of soft tissue. The latter were quite variable in severity, ranging from minute soft tissue hemorrhages to complete transection of the neck structures. Soft tissue injuries not associated with skeletal trauma were reported in 59 cases (9.3%). Associated fractures of the hyoid bone and/or laryngeal cartilages were present in 46 cases (7.3%) with the most common being hyoid fractures (30 cases). Less common were fractures of thyroid cartilage alone (10 cases), combination of hyoid and thyroid cartilage fractures (3 cases), and cricoid cartilage (3 cases). Seven cases of cervical spine injuries (fractures or dislocations) were documented.

A higher incidence of neck fractures occurred among men. There was a tendency for the number of fractures to increase with increasing age and weight/BMI of the deceased.

The frequencies of hyoid/laryngeal fractures distributed over forensic, teaching, and community facilities were as follows: 7.4%, 16.7% and 6.1%, respectively. The frequency of fractures reported in specialized forensic facilities reached 10.6% if the Forensic Pathology Unit in Toronto was excluded from the analysis. The lower frequency of fractures (2.8%) registered in this unit could be explained by different demographics of cases that underwent complete postmortem examination, specifically due to a higher proportion of complete autopsies performed on female and younger individuals. Higher frequency of fractures correlated with a higher percentage of cases in which there was accurate reporting, i.e., definite comments were made upon presence or absence of specific injuries and their site.

Hanging, Neck Injuries, Pathology