



Pathology Biology Section – 2006

G79 Hypothermia-Related Deaths in Cook County, Illinois From November 2000 to February 2005

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The goal of this presentation is to identify common risk factors in cases of hypothermia death.

This presentation will impact the forensic community and/or humanity by presenting epidemiological data on deaths due to hypothermia in Cook County, Illinois, including scene investigation, medical history, and toxicological studies.

Deaths due to hypothermia are a significant public health problem in cold climates in the United States. Cook County, IL, has a population of over 5 million people, and includes Chicago and 120 surrounding suburbs. Winter month temperatures in Illinois can reach below zero degrees Fahrenheit.

Risk factors for death during cold exposure are infancy, advanced age (? 65 years), inadequate shelter, mental impairment, substance abuse, and serious medical conditions. Cold-related deaths have received increased media attention in recent years in Cook County, Illinois, aimed in part at increasing public awareness of the deaths in order to decrease future deaths from hypothermia.

This retrospective study examined 129 cases of death related to hypothermia from the Office of the Medical Examiner in Cook County from November 2000 through February 2005, encompassing five winter seasons. Data examined included age, race and sex of decedents, location found, concomitant medical conditions, outdoor low temperature when found, the presence of paradoxical undressing, the presence of alcohol or other drugs, body temperature (when available), whether or not the decedent was homeless, and any other significant conditions that contributed to the death.

Three of the 129 cases were excluded from the study. In these three cases, the decedent suffered low body temperature due to sepsis during prolonged hospitalization; none were exposed to low ambient temperatures.

Of the 126 remaining cases, 34 occurred in the winter season of 2000-01, 27 from 2001-02, 26 from 2002-03, 20 from 2003-04, and 19 from 2004-05. Eighty-three cases (66%) listed hypothermia or cold exposure as the primary cause of death, and the remaining cases listed hypothermia or cold exposure as a contributing factor to death. Manners of death were listed as accident in 123 cases, suicide in two cases, and undetermined in one case, which involved an unwitnessed drowning with a high postmortem alcohol level. The group consisted of 65 white males (52%), 26 white females (21%), 25 black males (20%), 9 black females (7%), and 1 Asian male (<1%). In 52 cases (41%), the decedent was of advanced age. In 31 cases (25%), the decedent was homeless. The youngest decedent was 28 years old. Forty-seven cases (37%) involved alcohol, and 12 cases (10%) involved other drugs. In 67 cases (53%), the decedent had one or more significant medical problems, including heart disease, diabetes mellitus, dementia, or a seizure disorder. In six cases (5%), a significant injury contributed to the death. Body temperature was taken in 26 cases (21%), and ranged from less than 70°F to 94.5°F. Outdoor temperatures ranged from -9°F to 49°F on the evening before or day found. Mean temperatures per winter season were: 11°F in 2000-01, 21°F in 2001-02, 18°F in 2002-03, 20°F in 2003-04, and 25°F in 2004-05. Seventy three decedents (58%) were found outdoors, 39 (31%) were found indoors with no heat, 13 (10%) were found in various unheated areas, including motor vehicles, porches, and garages, and one was dropped off at the hospital with a high alcohol level and low body temperature by an unknown person. Paradoxical undressing, often cited as a hallmark of hypothermia, was observed in only seven cases (6%).

Autopsy findings in cases of death due to hypothermia may be absent or nonspecific. Correlation with the circumstances surrounding the death and the medical and social history of the subject is important in order to determine the correct cause of death.

Deaths due to hypothermia have decreased in Cook County over the last five years, possibly due to milder winters, but still remain a significant public health problem. The forensic community needs to be aware of the possibility of a cold-related contribution to cause of death.

Forensic Sciences, Hypothermia, Cold Exposure