

More information

The U.S. Food and Drug Administration has more on medication errors. SOURCES: David P. Phillips, Ph.D., professor, sociology, University of California at San Diego, La Jolla; Lisa Killam-Worrall, Pharm.D., BCPS, director, drug information and assistant professor, pharmacy practice, Texas A&M Health Science Center, Irma Lerma Rangel College of Pharmacy, Kingsville, Tex; July 28, 2008, *Archives of Internal Medicine* Copyright © 2008 ScoutNews, LLC. All rights reserved. 2008-07-28 16:00:00

Public Death, Fatal Oral Ingestion, Population Studies

G27 Complex Suicide: A Case Report

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After attending this presentation, attendees will appreciate the need of a high index of suspicion for the diagnosis of a complex suicide and the importance of a full and careful autopsy.

This presentation will impact the forensic science community by describing the diagnosis of complex suicides.

In 1974, Marcinkowski had proposed a general division of suicide. In this classification, suicides are first divided into simple versus complex. The term "complex suicide" refers to suicides in which more than one suicide method is applied and usually a distinction is made between planned and unplanned complex suicides. In planned complex suicides, the combination of two or more methods of suicide are previously planned and employed simultaneously in order to make sure that death will occur even if one method fails. On the other hand, in unplanned complex suicides, several other methods of suicide are tried after the first method chosen failed, if death occurs too slowly or when it proves to be too painful.

In planned complex suicides, typically two of the common methods of suicide (e.g., ingestion of hypnotics or other medicaments, hanging, drowning, use of firearms, jumping from a height) are combined. In unplanned complex suicides, injuries by sharp force, especially cutting the wrists, are often found as the primary act of suicide and then an appropriated method of suicide is use, more frequently hanging or jumping from a height.

A case of a complex suicide is presented where the victim shot himself in the head and hanged himself. The death scene investigation associated with the findings at the autopsy was very important to classify this complex suicide as an unplanned one.

The need, in some situations, of a high index of suspicion for the diagnosis of this entity is emphasized. So, a full and careful autopsy, including toxicological analysis, combined with the investigation of the death scene is mandatory in these cases. First, to exclude the possibility of intervention of another person in the death; and second, to allow a distinction between planned and unplanned complex suicide.

Suicide, Complex, Autopsy

G28 Fire Death of Two Lovers: An Immunohistochemical and Toxicological Study

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After attending this presentation, attendees will understand investigation of deaths due to phosgene intoxication and the importance

of an integrated analysis of histological and toxicological data to determine the manner and the cause of death in such cases.

This presentation will impact the forensic science community by underlining the importance of sampling and analyzing burned materials when phosgene intoxication is suspected. This compound is not detectable in body fluids and tissues due to its rapid conversion to hydrochloric acid.

The rate of annual deaths related to fire is about 13 per million inhabitants in the United States and Canada. These are mostly accidents followed by suicides. Homicides with subsequent burning of the victim or killings by burning are comparatively rare in Europe just as in the United States and Japan and are reported more often from India or South Africa.

The morphological findings in burned bodies may cover a broad spectrum. They can range from minor, local, superficial burns of the skin to calcined skeletal remains without any soft tissue left and total incineration. In most cases the effects of heat on the body continue beyond death, consequently, the changes found are largely of postmortem origin. The forensic investigation of deaths related to fire is important in order to determine the manner and cause of death and the vitality of the findings. The issues of vitality and cause of death are closely linked: the basis of the assessment is a careful evaluation of autopsy findings to distinguish morphological consequences of the effects of heat during life and after death.

A case will be presented where two burned bodies found early in the morning inside a joust (largely made of polyvinyl chloride - PVC and named "Wrestling labyrinth"), that burned in a town square after a festival. The victims were reportedly lovers (the boy 20 and the girl 16-years-old).

At external examination the corpses showed a typical boxer's attitude with general incineration, exposure of body cavities, bone fractures and partial amputation of extremities. To analyze the morphology of the fractures and their location a high-resolution computed tomography (CT) was performed, indicating that all fractures were a result of thermal effect.

Major internal findings consisted of hemorrhagic pulmonary edema and "puppet organs." Foam and soot particle depositis were detected inside the respiratory tract of both victims.

At histological examination of the lungs, ninety-five percent of the alveoli were flooded with edema and erythrocytes. There was no evidence of fibrin and inflammatory infiltrates. Immunohistochemistry, using epithelial (epithelial membrane antigen and cytokeratin) and endothelial (CD-34 and F-VIII) markers, revealed severe alveolar necrosis without endothelial damage of the vessels.

Systematic toxicological analyzes, performed on postmortem blood and urine, excluded alcohol and drugs intoxication. Monoxide-hemoglobin (CO-Hb) and cyanides concentrations were well below lethal values.

The presence of soot deposits and mucus inside the respiratory tract (not occluding the airways) along with a heat damage of the mucosa of the upper respiratory tract (edema, mucosal bleeding and vesicular detachment) suggest that the victims were alive during the fire and breathed fire-fumes.

The combined analysis of histological and immunohistochemical findings led us to identify the origin of the lung damage in the inhalation of an irritative gas. Laboratory tests, performed on burned samples of the joust (collected at death scene) and on samples of a similar undamaged joust, demonstrated an extensive production of phosgene during experimental burning.

Phosgene is a combustion, thermal decomposition or photodecomposition product of certain volatile chlorinated hydrocarbons (for example, trichloroethylene or perchloroethylene). These chlorinated hydrocarbon compounds can evolve phosgene if they come into contact with very hot metal, flame, or ultraviolet light. Phosgene is a colorless, extremely volatile gas which, at low concentrations, smells sweet, like freshly mown hay, whereas at high concentration has a pungent and

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objectionable odor. When aspirated, it combines with the water of the mucous membranes being rapidly converted to hydrochloric acid, with subsequent injury to the lungs (hemorrhagic pulmonary edema).

In this cases, even in the presence of extensive direct thermal injuries, the integration of histological and immunohistochemical findings suggests as principal mechanism of death an asphyxia by airway submersion related to the inhalation of phosgene (called "dry land drowning"). Indeed, the detected hemorrhagic pulmonary edema was of such an extension (involving more than ninety five percent of the alveolar space) to be clearly incompatible with life, and capable of causing a rapid death.

In conclusion, the reported cases highlight the following teaching messages:

1. Histological and immunohistochemical investigations may enhance the identification of the real cause and mechanism of death in fire accidents.
2. Sampling and analyzing burned materials may be of valuable importance when dealing with phosgene intoxications. This compound is not detectable in body fluids and tissues due to its rapid conversion to hydrochloric acid.

Phosgene Intoxications, Fire Deaths, Immunohistochemistry

G29 Non-Traumatic Subdural Hematoma in Adults

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The goal of this presentation is to provide attendees with knowledge of the range of causes of subdural hematoma in adults and the key clinical and anatomic features that distinguish nontraumatic from traumatic subdural bleeding.

This presentation will impact the forensic science community by enhancing the efficiency and accuracy of investigation and certification of deaths from subdural bleeding.

While head trauma is the commonest cause of subdural hematoma both in hospital and in medicolegal autopsy settings, some patients presenting with subdural hemorrhage have a non-traumatic etiology. Because rapid demise may preclude angiography and other procedures to establish the source of subdural blood, these cases often come to the attention of the medical examiner. Distinguishing such "spontaneous" subdural hemorrhage from the more common traumatic subdural hematoma rapidly and with confidence can be a challenge to the forensic and neuropathologist. Complete radiologic reports often are not available at the time of the report of death, allegations of head impact during collapse may complicate the investigation, and neuropathologic examination of the brain at autopsy is best preceded by fixation of the brain prior to dissection. Certain historical and gross autopsy findings should prompt a heightened index of suspicion of nontraumatic etiology in subdural hemorrhage. The entities most often associated with spontaneous subdural bleeding include subdural extension of intracerebral hemorrhage, cerebral arteriovenous malformations and aneurysms, and metastatic tumors. Impaired coagulation from medications or from natural conditions such as hematologic or hepatic disorders also can result in subdural hemorrhage. In cases of nontraumatic subdural hemorrhage, the face and scalp will lack abrasions or contusions. When the brain is examined grossly on removal, focal, thick subarachnoid hemorrhage, especially if located other than in the parasagittal cerebrum, is suggestive of a source of subdural hemorrhage within the brain rather than from rupture of bridging veins as is usual in trauma. Five cases of non-traumatic subdural hemorrhage in adults are presented with case histories,

radiologic data when available, autopsy findings and a review of the literature. The information presented will enhance the efficiency and accuracy of investigation and certification of deaths from subdural bleeding.

Subdural Hematoma, Death Investigation, Neuropathology

G30 Accidental Carbon Monoxide Poisoning: A Review of Environmental and Cultural Risk Factors of Fatal Cases in King County

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After attending the presentation, the attendees will be able to identify certain environmental and cultural factors that may increase accidental death by carbon monoxide inhalation.

This presentation will impact the forensic science community by increasing awareness of environmental and cultural factors that influence the misuse of carbon monoxide producing devices and will suggest ways to decrease the incidence of accidental deaths.

Introduction: Carbon monoxide (CO) is an odorless, colorless gas that forms as a result of incomplete combustion of carbon-containing fuels. While trace levels of CO are found in the atmosphere, fatal levels are found in exhaust from multiple sources including automobiles, generators, propane heaters and charcoal burning grills. Accidental carbon monoxide poisoning is responsible for up to fifty percent of the yearly carbon monoxide related fatalities in King County (five accidental deaths in ten total carbon monoxide deaths in 2007).

Purpose: Risk factors of accidental CO related deaths in King County from 1996 to 2008 were reviewed in an attempt to reveal preventable causes.

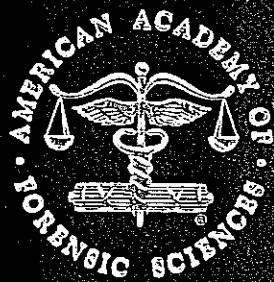
Methods and materials: Between 1995 and 2008, 221 cases of carbon monoxide poisoning were identified between 1995 and 2008 within the King County Medical Examiner's information database. Forty-three of which were results of accidental CO poisoning between 1996 and 2008. These cases were analyzed with respect to scene investigation reports and circumstances surrounding fatality.

Findings: CO producing devices were found placed within single family residences in 19 of the 43 accidental deaths. Eleven cases involved CO producing products within vehicles used for residence including trailers, RVs, campers, and vans. Seven of the deceased were found in their cars in their garage, four died from house fires, and the exact location of the source of CO was unclear in two cases (outside versus inside the home). Further review indicated generator exhaust as the most common source of accidental CO poisoning, with 18 of 43 total accidental deaths. Other sources of CO in decreasing incidence included exhaust from vehicles (7), heaters (6), charcoal burning (6), house fires (4), furnaces (2), a hot water heater (1), and an engine from an industrial carpet-cleaning machine. Nine deaths were due to generator exhaust or charcoal burning during power outages, including eight during a windstorm during December 2006. Four incidents included deaths of more than one individual with three paired deaths (6 total deaths) and one Vietnamese family (5 total deaths). 69% (30) of the CO victims during this time were White, 7% (3) were Black, 7% (3) were Hispanic and 16% (7) were Asian/Pacific Islander. The majority of these cases involve people who are unfamiliar with the proper use of generators or charcoal products, either due to inexperience or inability to gain information about certain products in their native language. No carbon monoxide monitors were identified in any scene investigation reports.

Discussion: The most significant environmental and cultural risk factors identified were unfamiliarity with CO producing products and the inability to receive information about these products in various

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