Tracey S. Corey,[1] M.D.; Barbara Weakley-Jones,[1] M.D.;
George R. Nichols II,[1] M.D.; and Heather Hoffman Theuer,[2] M.D.

Unnatural Deaths in Nursing Home Patients

REFERENCE: Corey, T. S., Weakley-Jones, B., Nichols, G. R. II, and Theuer, H. H., **"Unnatural Deaths in Nursing Home Patients,"** *Journal of Forensic Sciences*, JFSCA, Vol. 37, No. 1, Jan. 1992, pp. 222–227.

ABSTRACT: Nursing home residents comprise a large and rapidly growing segment of the national population. Despite this fact, the majority of deaths occurring in nursing homes are not investigated because of the significant medical illnesses suffered by most residents. Herein, we report a series of unnatural deaths in nursing home residents, including two homicides and seven accidental deaths. In four of the deaths, there was an attempted concealment of the cause and manner of death. Fearing criminal or civil proceedings, nursing home personnel may attempt to conceal homicidal or accidental deaths in nursing home residents. Because of the serious, chronic illnesses suffered by these patients, attending physicians are often willing to sign death certificates without personally investigating the circumstances surrounding the patient's demise. The authors contend that unnatural deaths of nursing home patients are significantly underreported. Attending physicians and death investigators should be urged to investigate more fully sudden deaths in nursing home patients.

KEYWORDS: pathology and biology, nursing homes, death, homicides, physical restraints, unnatural deaths

Currently, more than 1.5 million persons reside in nursing homes in the United States. The percentage of older adults living in nursing homes increases dramatically with age, ranging from 2% for persons 65 to 74, to 22% for persons 85 and older [*1*]. Approximately 25% of deaths of persons over 65 occur in long-term care facilities [*2*]; however, autopsies are performed in less than 10% of nursing home deaths [*2,3*]. This is due, in part, to the significant chronic medical illnesses suffered by most residents. The available autopsy reports on nursing home residents deal with natural deaths, and case reports of accidental deaths occurring in nursing homes are rare [*2,3,5*].

This case series consists of nine unnatural deaths in nursing home patients undergoing autopsy over the past seven years, compiled by recollection of these cases. The manner and cause of the unnatural death and the death investigation were reviewed in each case. Concealment of evidence by the nursing home personnel was discovered in four of the nine cases.

Case Reports

There were two homicides and seven accidental deaths in this series. These cases are grouped accordingly.

Presented at the 43rd Annual Meeting of the American Academy of Forensic Sciences, Anaheim, CA, 18–23 Feb. 1991. Received for publication 8 April 1991; accepted for publication 3 May 1991.

[1]Office of the Chief Medical Examiner, Louisville, KY.
[2]Department of Pathology, University of Louisville, School of Medicine, Louisville, KY.

Homicidal Deaths (Cases 1 and 2)

Case 1

An 80-year-old white female died after manual strangulation by another nursing home resident. In this case, the coroner's office was notified by the nursing home. At autopsy, the external surface of the neck demonstrated parallel curvilinear superficial abrasions consistent with nail marks. Petechial hemorrhages were present diffusely on the neck, and irregular contusions were present over the thyroid cartilage. Conjunctival petechiae were present. Dissection revealed a fracture of the calcified styloid cartilage, and laryngeal and strap muscle hemorrhage. Natural disease processes included generalized cerebral cortical atrophy and chronic pyelonephritis. A court of law determined that the demented assailant was not competent to stand trial.

Case 2

An 88-year-old nondiabetic white male was given a fatal insulin injection by an attending nurse. Ten days after death, an anonymous caller alerted the coroner's office of possible foul play. The body was exhumed, and at autopsy, two needle puncture sites were identified in close proximity to a large decubitus ulcer over the right hip. The area of injection was excised, and immunoperoxidase stains for porcine, bovine, and sheep insulin were attempted, with unrewarding results. Natural disease processes included multiple remote cerebral infarctions, a chronic brain abscess, multiple decubiti, a remote myocardial infarction, and chronic pyelonephritis. The nurse confessed and was found incompetent to stand trial. Her nursing license was revoked.

Accidental Deaths (Cases 3 Through 9)

Case 3

An 81-year-old black male slipped between the mattress and the side rail of his bed, with resultant external compression of the left common carotid artery. Investigation of this death began one week after burial when an anonymous caller alerted the coroner's office. The external thorax and neck of the embalmed body displayed a pattern of multiple contusions which corresponded with the bed rail. Dissection revealed deep soft tissue hemorrhage and hemorrhage of the adventitia of the left common carotid artery. Natural diseases included a remote infarction of the right cerebral hemisphere and a remote myocardial infarction.

Case 4

A 34-year-old white male had been a patient in a nursing home for approximately one year after a motor vehicle collision which resulted in closed head injury. At the time of the patient's death, the nursing home notified the coroner's office. The coroner's report indicated that the victim had been placed in a vest restraint because of his "violent and combative" nature. Death investigation revealed that the restraint had been improperly positioned on the patient. The cause of death was ligature asphyxia, evidenced by autopsy findings of face and neck petechiae and ligature abrasions of the neck and left axilla. The autopsy also revealed remote contusions of the inferior surfaces of the frontal lobes, and remote tracheostomy and gastrostomy tube placement.

Case 5

An 80-year-old white female was originally found tied into a chair with a chest restraint which had been placed backwards. When the body was discovered, the restraint was found across the anterior portion of the neck. The nursing homc personnel notified the coroner's office after moving the body to another room, removing the chest restraint, and placing the restraint in the laundry room. Upon arrival, the deputy coroner immediately noted a 6 by 1-cm ligature abrasion about the anterior and left lateral neck. At autopsy, conjunctival petechiae were identified. Concomitant findings included atherosclerosis, cholelithiasis, osteoarthritis, and cerebral cortical atrophy.

Case 6

An 86-year-old white male had been secured to a wheelchair with a vest restraint. The patient was known to use his feet to move his wheelchair freely in the nursing home. According to the coroner's report, he was last seen 4½ h prior to the discovery of his body. The bottom tie of the restraint was missing, which had allowed the patient to slip downward, with resultant external compression of the anterior neck. The autopsy revealed a 20-cm ligature abrasion, conjunctival and facial petechiae, and a fracture of the hyoid bone. Natural disease processes included cerebral cortical atrophy, calcific valvular disease, and evidence of remote neck dissection.

Case 7

A 91-year-old black male residing in a mini-home had been placed in a tub of hot water and was discovered unresponsive approximately 15 min later. When emergency medical services arrived, the patient's axillary temperature exceeded 108°F (42°C). At autopsy, the body displayed second- and third-degree burns over 70% of the total body surface area. Distinct immersion lines were present; splash burns were absent. Natural diseases included moderate cerebral cortical atrophy and a recent hemorrhage into a coronary artery atheromatous plaque. Subsequent testing revealed a tap water temperature of 130°F (54°C).

Case 8

An 84-year-old white male was discovered on the floor of his room in cardiopulmonary arrest approximately 10 min after his lunch plate had been delivered. When emergency medical services arrived, resuscitative efforts were not in progress. Questioning of the nursing home personnel revealed that no one present possessed basic life support certification. The autopsy revealed a large food bolus occluding the upper airway. Natural diseases included cerebral cortical atrophy and micronodular cirrhosis.

Case 9

A 97-year-old black female died after she wandered out of a side door of a nursing home on a winter night. She was found entangled in underbrush. Nursing home personnel brought the body inside and removed the soiled clothes. The body was washed, redressed, and placed in bed. The victim's physician was notified of her death, and he agreed to sign a death certificate. The body was released to a funeral home. The mortician preparing the body for burial noticed multiple external contusions and abrasions and notified the coroner. Based on subsequent investigation, death was attributed to hypothermia. Concomitant findings included a small pneumothorax and multiple external contusions and

abrasions. Chronic diseases included severe generalized cerebral cortical atrophy and pulmonary emphysema.

Discussion

This case series included two homicides and seven accidental deaths (Table 1). Of the accidental deaths, four were caused by asphyxia, three by restraint devices; one was caused by scald burns; another was caused by airway obstruction (without an attempt to resuscitate the victim); and the seventh was attributed to hypothermia.

With one exception, all the patients were at least 80 years old. The exception was a closed head injury victim. Eight of the nine patients displayed chronic incapacitating central nervous system (CNS) pathology. It has been previously noted that "impairments inherent in the condition of the aged" alter if not diminish their ability to protect themselves from the kind of accidents that may lead to their demise [*4*].

Three of the accidental deaths involved chest restraints. In these cases, the restraint was either improperly applied or in disrepair, and ligature asphyxia ensued. In Cases 4 and 5, the restraint had been placed backwards on the patient. In Case 6, the bottom tie of the restraint was missing, allowing the patient to slip down in his chair. There have been other reports of accidental deaths caused by the use of restraint devices [*4–6*], and these devices have been the topic of several recent publications [*7,8*]. The use of restraints in nursing homes is widespread, ranging from 25 to 85% [*8*]. In Kentucky, legislators have addressed the issue of restraint safety, and current regulation stipulates the recording of one restraint check every 30 min in the patient's chart [*4*].

Obstructed airway was the cause of death in Case 8. The personnel found the patient in full arrest 10 min after lunch trays had been served. They did call emergency medical services, but no one attempted basic life support. Federal regulation does not require that nursing home aides be certified in basic life support. In Kentucky, some facilities, though not all, require their aides to have basic life support certification.

Concealment of evidence was discovered in one homicide and in three accidental deaths. In Case 2, the actual manner of death (homicide) was discovered by investigation initiated after receipt of an anonymous call to the coroner. In Case 3, the nursing home failed to report an unnatural death that involved a bed rail. In Case 5, nursing home personnel tampered with evidence to conceal that a chest restraint had been improperly placed on a patient. In Case 9, the nursing home personnel also tampered with evidence, and the unnatural death would have gone unreported if the mortician had not suspected unnatural death.

Conclusions

Legislation exists to protect residents of long-term health care facilities, but obviously nothing short of around-the-clock enforcement can prevent every accident that occurs. The need for better enforcement of legislation pertaining to nursing homes can be discovered only if unnatural deaths are appropriately reported. As illustrated by this study, nursing home personnel sometimes conceal evidence that is critical to the determination of manner of death. In cases where the attending physicians blindly sign death certificates, unnatural deaths may go unnoticed. While every death in a nursing home does not warrant a death investigation, in cases of sudden death, an investigation may reveal evidence of an unnatural death.

Acknowledgments

We gratefully acknowledge Ramona Lucas for her assistance in manuscript preparation.

TABLE 1—*Summary of cases.*

Case Number	Manner of Death	Case of Death	Coroner Notification	Incapacitating CNS Pathology
1	Homicide	manual strangulation	personnel at time of death	no
2		insulin injection	anonymous caller one week after death	yes
3	Accident	compression of common carotid artery (bed rail)	anonymous caller one week after death	yes
4		ligature asphyxia (chest restraint)	personnel at time of death	yes
5		ligature asphyxia (chest restraint)	personnel after removal of evidence	yes
6		ligature asphyxia (chest restraint)	personnel at time of death	yes
7		third degree scald burns	personnel at time of death	yes
8		airway obstruction	personnel at time of death	yes
9		hypothermia	mortician	yes

References

[1] Blazer, D. G., "Demography of Aging," *Geriatrics Review Syllabus*, J. C. Beck, Ed., American Geriatrics Society, New York, NY, 1989, pp. 1–5.
[2] Gloth, F. M. and Burton, J. R., "Autopsies and Death Certificates in the Chronic Care Setting," *Journal of the American Geriatrics Society*, Vol. 38, No. 2, Feb. 1990, pp. 151–155.
[3] Gross, J. S., Neufeld, R. R., Libow, L. S., Gerber, I., and Rodstein, M., "Autopsy Study of the Elderly Institutionalized Patient," *Archives of Internal Medicine*, Vol. 148, Jan. 1988, pp. 173–176.
[4] Weakley-Jones, B. and Wernert, J., "Accidental Deaths in the Aged by Protective Devices," *Journal of the Kentucky Medical Association*, Vol. 84, 1986, pp. 273–276.
[5] Dube, A. H. and Mithcell, E. K., "Accidental Strangulation from Vest Restraints," *Journal of the American Medical Association*, Vol. 256, No. 19, Nov. 1986, pp. 2725–2726.
[6] DiMaio, V. J. M., Dana, S. E., and Bux, R. C., Letter to the Editor, *Journal of the American Medical Association*, Vol. 255, No. 7, Feb. 1986, p. 905.
[7] Evans, L. K. and Strumpf, N. E., "Tying Down the Elderly," *Journal of the American Geriatrics Society*, Vol. 37, No. 1, Jan. 1989, pp. 65–74.
[8] Sloane, P. D., Matthew, L. J., Scarborough, M., Desai, J. R., Koch, G. G., and Tangen, C., "Physical and Pharmacologic Restraint of Nursing Home Patients with Dementia," *Journal of the American Medical Association*, Vol. 265, No. 10, 13 March 1991, pp. 1278–1282.

Address requests for reprints or additional information to
Tracey S. Corey, M.D.
Office of the Medical Examiner
810 Barret Ave.
Louisville, KY 40204