Reenactment of Circumstances in Deaths Related to Restraint

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Abstract: Reenactment of the circumstances in deaths associated with restraint, utilizing participants and witnesses while memories are fresh, may help death investigators more accurately determine the cause of death. Two recent deaths in Ventura County that occurred during restraint are discussed. Within a day of the autopsies the restrainers agreed to participate in reenactments of the restraint process, utilizing live volunteers as subjects. They allowed videotaping. Deaths associated with restraint often have nonspecific autopsy findings. Timely reenactment of the circumstances of deaths associated with restraint can help death investigators more accurately determine the probable cause of death in these difficult cases.

Key Words: reenactment, video, restraint asphyxia, positional asphyxia, in-custody death

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Deaths that occur in conjunction with custodial physical restraint are problematic for medical examiners and coroners when the autopsy does not disclose a clearly fatal lesion and toxicology test results are negative or equivocal. Whether the restraint was applied by police in the field, prison staff, hospital staff, or tavern patrons removing an obnoxious drinker, determining the probable cause of death often depends mostly on witnesses. Usually, the subject is not actually pronounced dead at the scene of the restraint. Rather, the restrainers eventually notice the loss of vital signs, initiate cardiopulmonary resuscitation efforts, and call for emergency assistance. The subject is usually transported to an emergency room, where death is pronounced, or he is resuscitated to a coma and dies some hours or days later.

Though scene investigation may provide some information about the circumstances of the death, usually the scene is transitory and has disappeared along with the restrainers and any other witnesses. Absent a functioning video camera trained on the restraint scene, the only way to reasonably reconstruct what occurred is through the recollection of the restrainers and witnesses. Individually interviewing each witness and participant is a time-tested and time-consuming police method for obtaining accounts of events without introducing confusion and group bias into the record. But individual interviews are of limited value to the death investigator in restraint-related deaths when the interviewer does not ask the right questions. The questions asked need to have enough specificity to elicit answers to questions about how long the subject was restrained; in what positions he was restrained; how much weight was applied to torso areas; how the subject reacted and verbalized; when the subject stopped moving, breathing, or talking; and whether he demonstrated clear signs of consciousness or life after the restraint process was completed or terminated. Following the individual interviews of witnesses by police, there is usually still much confusion about what happened, especially when there were many participants in the restraint process. If after the gross autopsy there is still reason to be concerned that the death could be from asphyxia, then the medical examiner should consider coaching the witness interviewers or participating in the interviews so that the right questions are asked.

CASE REPORTS

Ventura County had 2 restraint-related deaths in the year 2002. In both cases, we conducted videotaped reenactments of the restraint process using the actual restrainers and a volunteer as the subject. These were done after the initial interviews and following the autopsies. The 2 cases are summarized below.

Case 1

A 35-year-old man died while being manually restrained prone on the floor at a mental hospital. About 20 hours prior to death, he was in a minor traffic accident, driving his car into a ditch in midmorning. At an emergency room, he had only minor external injuries but was hallucinating. He was sent to a county mental health clinic, put on a 72-hour hold, and transferred to a private mental hospital.

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He had been cooperative and fairly calm until about an hour before death, when he was found jumping on his bed, having broken a light fixture, complaining of having had a nightmare and acting belligerently. Staff verbally calmed him, walked him to another room, and gave him a diphenhydramine pill, which he swallowed. He then went into the bathroom and began punching and kicking holes in the walls. Staff struggled with him, removed him from the bathroom, and initiated restraint.

The subject was restrained prone on the floor in a "spread-eagle" fashion while other staff went for medication for what appeared to be an acute psychotic episode and to prepare soft restraints for the "time-out room." He was described as kicking, fighting, biting, and cursing. He was restrained prone for about 10 minutes. During most of the restraint, 3 to 4 male attendants were holding him down: one sitting on the legs, one lying across his upper back with his arms securing the subject's shoulders, and one other attendant each securing an arm. Staff reported that at one point during restraint the subject said, "I give up," and stopped resisting, but as soon as they released some pressure, he started struggling again. About 2 minutes before loss of vital signs, staff injected 2 mg of lorazepam and 5 mg of haloperidol in his buttock. While still in a prone restraint position with a 250-pound attendant on his back, he turned blue and went limp. They rolled him over, noted no vital signs, started cardiopulmonary resuscitation (CPR), and called 911.

Paramedics found the subject in asystole. Advanced life support measures were administered, and the subject had a brief period of ventricular fibrillation without successful electrical cardioversion. He was transported to an emergency room, where he was pronounced dead after 20 minutes. No body temperature was obtained.

Family stated that the subject had no medical conditions. They did say that 10 years prior, he was in a traffic accident with head injuries and had mental problems since then. He had no known seizures and no treatment of his mental problems.

The autopsy on the day of death disclosed minor external injuries, no facial petechial hemorrhages, and no cardiovascular or other organ disease or injury to explain death. The subject was 67 inches tall and weighed 212 pounds. Old inferior frontal cortical contusion scars were in the brain. Postmortem toxicology yielded only very low levels of marijuana metabolite and diphenhydramine in blood.

The day after the autopsy, the staff and administration of the mental hospital agreed to allow the medical examiner and local police to audiotape and videotape more detailed interviews and a reenactment of the restraint. The actual staff played themselves and their supervisor played the subject. As questions were being asked during the reenactment, the supervisor asked the restrainer on her back to get off because she could not breathe. The restrainer said he did not realize he was applying too much weight.

The cause of death was listed as "asphyxia by chest compression during prone restraint" with "acute psychotic episode" listed as contributing. The manner of death was listed as "accident."

Case 2

A 28-year-old man died while being manually restrained supine on the bench seat of a full-size van. He was moderately mentally retarded and had problems with impulse control. He lived for years in a residential group home with several other adult male clients and caretakers. The caretakers had taken the clients on an evening outing to watch a basketball game. During the game, the subject became verbally disruptive, and the caretakers decided to take the whole group home. The subject was resistive and combative. Two male staff who had known him for years restrained him supine on a middle bench of the van. One held and leaned against his legs, and the other gripped his wrists. During the drive, the subject struggled and yelled that he did not want to go home. Both caretakers said they never applied force to his chest or abdomen. None of the other clients or staff in the van saw anything because it was dark.

An estimated 10 minutes into the trip, the subject reportedly suddenly stopped yelling and went limp. The caretakers felt no breathing or pulse. One started mouth-to-mouth breathing while the other called 911 on a cell phone. The driver stopped the van; they put the subject on the ground and continued CPR until ambulance staff took over. He was asystolic and never regained vital signs. He was pronounced dead at the emergency room. Two hours after death, his rectal temperature was 98°F.

An autopsy the next morning disclosed only minor injuries consistent with rescue attempts, arm and leg contusions, many ocular petechial hemorrhages, aspirated vomit, and obesity. He was 68 inches tall and weighed 253 pounds. His blood contained therapeutic or subtherapeutic concentrations of his prescribed valproic acid, gabapentin, and olanzapine.

After discussing the case issues with local police who had custody of the van, we asked the 2 restrainers if they would participate in a videotaped reenactment of the restraint event. They agreed and a police cadet of approximately the same size played the decedent's role. The reenactment took place the afternoon after the autopsy. The caretakers recounted and demonstrated the events in a credible fashion, making it very unlikely that asphyxia by chest compression occurred.

The cause of death was listed descriptively as "probable cardiac arrhythmia due to agitation with struggle and manual restraint due to mental retardation and impulse control disorder." The manner of death was listed as "natural."

DISCUSSION

In the mid-1990s, some writers proposed the label "sudden in-custody death syndrome" for the unexpected deaths in custody restraint where the autopsy and toxicology failed to yield a convincing cause of death.[1] The analogy with sudden infant death syndrome (SIDS) could be extended even further. One could compare restraint-related deaths to SIDS with cosleeping. If a parent admits to finding his or her baby lying dead or unconscious under them when they awaken, then many of us death investigators would certify the death as asphyxia by suffocation or overlaying. If the parent did not find the baby under them, or chose not to admit that they did, then many would call the death SIDS, or some may choose to call it undetermined. If we do not ask the painful question, we will seldom know the answer. If the answer to the question is not truthful, at least we asked.

Dr. Reay first wrote about the dangers of positional asphyxia related to hogtying. The implication was that the hogtied prone restraint position could cause asphyxial death.[2] We suggested that it may not be so much the prone restraint position that was causing death but rather the weight applied to the subject's torso during the restraint episode that prevented adequate breathing.[3,4] We suggested that the term *restraint asphyxia* be used rather than the term *positional asphyxia* in deaths that occur during active restraint with potential for significant prolonged chest compression. Though the distinction may appear subtle, in practical terms it is important. As the dangers of death associated with hogtying became known in the 1990s and restraint methods were modified accordingly, deaths during prone restraint continued to occur. Focusing on positional asphyxia and the hogtied position implied that modifying the hogtie method or eliminating the cinching of the ankles to the wrists would eliminate the deaths. But it did not. Unfortunately, the *positional asphyxia* term persists in reference to restraint-related deaths and still leads to confusion about the mechanism of death.

The mechanisms of death and the differential diagnosis of causes of death during restraint have been discussed before.[4,5] If the autopsy rules out obvious fatal injuries or a catastrophic natural disease event, then the pathologist is left with several possibilities for the cause of death. *Drug toxicity* is a possibility, but results are often a long time coming and must be interpreted in the light of the circumstances of death in any event. Death from *excited delirium* has been offered as the cause of death in many deaths during restraint when the subject's behavior prior to restraint implied delirium. Delirium associated with cocaine or other stimulant drug use has been postulated to cause death, but the mechanism(s) of such deaths is unclear. The only somewhat reliable postmortem finding identified so far is hyperthermia. Unfortunately, seldom are premortem or prompt postmortem temperatures obtained. Death from emotional or physical stress, the *adrenaline surge* causing a fatal arrhythmia, has been offered as the cause of death in cases with and without underlying gross heart disease. This also leaves no telltale postmortem findings and is a diagnosis by exclusion.

Considering the possibility of asphyxia during the restraint process is an important part of the differential diagnosis. Mechanisms to consider are nose and mouth obstruction, neck compression, and mechanical interference with breathing by compression of the chest and abdominal region. Currently the preferred method of restraint is prone, since it facilitates the restraint and lessens the chance of injury to the restrainers. But the prone position makes it harder for the restrainers to monitor the well-being of the subject. A cloth wrapped around the face to prevent spitting and biting may cause respiratory difficulty or mask respiratory distress. An arm placed around the neck to help hold the subject in place may compress the neck when another restrainer presses on the head or shoulders. Sitting, lying, kneeling, standing, and manually pushing on a subject's back during prone restraint are common practices. If more than 1 restrainer is involved, no one person may be aware of the collective weight on the torso.

Death from asphyxia by chest compression should take at least a couple minutes to effect. If the death investigator can establish that the duration of the restraint was too short to cause asphyxia or that the nose, mouth, neck, and chest were not compressed, then asphyxia can be reasonably ruled out. Rarely do the initial incident reports by witnesses or restrainers provide enough detail to rule out asphyxia. Initial police investigative reports also usually lack enough specificity. If after the initial gross autopsy the cause of death is not clear and asphyxia has not been ruled out, then prompt reinterviews of witnesses, asking specific questions, can go a long way in providing answers that otherwise may be sought in protracted litigation. The need to carefully reconstruct the sequence of events in deaths that occur in custody has been emphasized before.[6,7] We found that a prompt reenactment of the restraint episode was useful in ruling in restraint asphyxia in case 1 and in ruling out restraint asphyxia in case 2. Videotaping the reenactment had the added value of markedly shortening the interview process and report writing time. The availability of the videotapes may shorten any subsequent civil litigation time or costs and should aid adjudication.

CONCLUSIONS

Deaths that occur during restraint involving more than 1 restrainer are difficult to evaluate when the autopsy provides no clear cause of death. Included in the differential diagnosis is asphyxia by several possible mechanisms. Since initial investigative reports often do not provide sufficiently specific information about the asphyxial potential of the restraint process, specific questions of restrainers and witnesses should be asked after the autopsy. The sooner the

questions are asked, the more likely that the recollections will be accurate. Videotaping a reenactment of the restraint episode is an efficient way to collect and store useful information.

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