Homicide by drowning

Leth, Peter Mygind

Published in:
Forensic Science, Medicine, and Pathology

DOI:
10.1007/s12024-018-0065-9

Publication date:
2019

Document version
Accepted manuscript

Citation for published version (APA):
Homicide by drowning

Abstract

Homicide of a child by drowning occurs occasionally, but it is much rarer that an adult is murdered in this way. When the victim is a child, there will often be few or no signs of violence due to the difference in size between the assailant and the victim; however, evidence of a struggle is often found in adults, unless the victim was incapacitated by alcohol, drugs or physical weakness or was unexpectedly pushed into or dragged under water. The incidence of undetermined manner of death is high in bodies retrieved from water. Therefore, a thorough investigation is needed. We have reviewed the literature regarding homicidal drowning.

Keywords: drowning; exposure; homicide; Greenland; child

Figure text

Figure 1: Drowning victim with froth from the nostrils.
Figure 2: Lungs from a drowning victim. The lung tissue is pale and oedematous.
Figure 3: Wrinkling of the skin of hands in drowning victim (dishpan hands).
Figure 4: Drowning victim who has aspirated foreign material to the airways.
Figure 5: Drowning victim with lesions caused by marine predators.
Figure 6: Head of the deceased (table 1, example 2) with a contusion wound in the right eyebrow and suggillations and abrasions on the forehead, cheek, jaw and nose.
Most homicidal drownings reported in the forensic literature involve children drowned by an adult [1]. This may occur in family homicides, where a parent, usually the father, kills his children and sometimes the spouse, often followed by his own suicide [2]. An example of such a homicide is described in the table. When the victim of homicidal drowning is a child, there may be no or few signs of violence, such as bruising or abrasions, due to the difference in size between the assailant and the victim. Drowning of a child may also be the result of fatal child abuse [3]. Nixon and Pearn [4-6] wrote papers in 1977 describing the characteristics of accidental and non-accidental immersion of children in bath water. The latter occurred at an unusual time of the day with the child alone in the bath. The perpetrator was usually the parents, and a precipitating domestic crisis was usually present. They also found that the victims were older, usually 15 to 30 months of age, compared to 9 to 15 months for accidental immersion. Accidental submersion death occurred at the usual bath time. Usually, more than one child were present in the tub, and typically the oldest left the youngest, at a time with no adequate adult supervision. Birth into a toilet or the drowning of a new-born child in cases of concealed pregnancy are seen occasionally [7, 3]. These cases necessitate careful investigation of the scene. The position of the infant and placenta must be documented with photography to determine if the position is consistent with delivery into the toilet. A complete history of the circumstances and the medical history of the pregnancy are obviously needed. Autopsy with post-mortem radiology, investigation of the placenta and the umbilical cord and full microscopy is also important. A sample for paternity testing should be taken. Comparisons of water from the toilet, which sometimes contains chemical additives, with water from the stomach and lungs are sometimes useful. If the infant was alive, froth may be seen in the water and in the face of the infant. Oscurati et al. [8] presented an unusual child homicide performed by placing a 7-month-old baby in a washing machine and turning it on. The perpetrator was the mother, who suffered from a serious depressive disorder. Melez et al. [9] reported a case motivated by divorce
and struggle over child-custody in which a 30-year-old man and his 5-year-old daughter were found drowned in the sea bound together.

Homicidal drowning of an adult is much rarer [10-12]. In these cases, signs of violence are often found, unless the victim was incapacitated by alcohol, drugs or physical weakness or was unexpectedly pushed into or dragged under water [10, 13]. An example from Greenland has been described in table 1. The general homicide rate in Greenland is high (23/100,000 inhabitants per year, population 2018: 55,577) [14].

A thorough investigation of a body that is retrieved from water is required to determine the mode of death [1, 15, 16]. Lunetta et al. [11] conducted an investigation in Finland and found a high incidence of an undetermined manner of death at the medicolegal inquest in drowning cases, indicating that that homicidal deaths may be underreported [17]. Lucas et al. [18] found that the mode of death was undetermined in approximately one-third of all bodies found dead in the waterways of New York City.

The final conclusion regarding mode of death is usually a result of cooperation between the pathologist, other forensic scientists and the police. The investigation begins at the scene where the deceased was found or where the incident occurred.

A full autopsy is important for determining the cause and mode of death, for reconstructing the events that preceded the death and for identifying the victim [1]. In addition, it is clearly important to determine whether the deceased person died from drowning and whether the person was alive before entering the water. It is essential that all body injuries be described. The main positive findings for drowning are froth in the airways and exuding from nostrils and mouth (figure 1), water-logged lungs (emphysema aquosum) (figure 2), hydrothorax, water in the stomach and nasal sinuses and wrinkling of the skin of hands and feet (dishpan hands) (figure 3). These findings are, however, not specific for drowning and can be observed in drug-overdoses and cardiac deaths;
the absence of these symptoms cannot exclude the possibility of drowning. Occasionally foreign bodies from the water have been aspirated to the airways (figure 4). The diagnosis is especially difficult when there is a delay in recovering the victim. Bodies that are found in the sea will often be decomposed and injured by the action of waves against obstructions or by marine predators (figure 5), and blood may be washed out of the wounds. After a few weeks or months, adipocire formation begins. These changes may complicate the evaluation of the case. In example 2 presented in the table, the body was found quickly, so it was still possible to detect vital lesions. Determining the time of death based on body temperature is difficult if the body has been in water for an unknown period of time. Determining the time in water based on post-mortem changes are also difficult. Bodies found in the water are sometimes weighed down or have their hands or feet bound together. Although this can be seen in cases of suicide, it should be considered suspicious. A close investigation of the knots is important to determine whether they could have been tied by the deceased [19]. Pollanen [20] presented six cases of homicidal drownings that were investigated using the diatom test for drowning. The diatoms were extracted from the bone marrow and compared with those obtained from samples of a putative drowning medium. The diatom test gave important information regarding the cause of death and site of drowning in all cases, even when the bodies were recovered on dry land. However, the diatom test is not sensitive, and diatoms can be absent, even in obvious cases of drowning, and the test is sensitive to contamination. Comparison of the content of water from the site of drowning with aspirated material in the bronchi or in the stomach or found on the body or clothing are sometimes useful [3].

Presence of alcohol in the blood of both the victim and perpetrator is commonly reported in the literature [21]. Missliwets et al [22] described a case in which a drunken dispute between two alcoholics led to homicide by drowning in a pond. The perpetrator was a woman who was physically larger than the male victim. Autopsy revealed evidence of a struggle. A full toxicological
screening is important to determine whether the deceased was under the influence of alcohol or other drugs at the time of death. Carbon monoxide poisoning should also be considered in cases of death in a bathtub. Seizure disorders such as epilepsy may also result in drowning [23, 24].

People can drown in rivers, lakes or the sea; they can also drown in bathtubs [25], swimming pools or in other bodies of water, such as wells [26].

Several bathtub deaths via homicide have been documented in the literature. The most famous is the so-called “brides in the bath” murders from England, for which the serial killer and bigamist, George Joseph Smith, was executed in 1915 [27]. He murdered three wives, two of them during their honeymoon, by dragging them underwater by the ankles while they were taking a bath. The mechanism of death was probably reflex asphyxia (vagal inhibition) caused by a sudden influx of water through the mouth and nose. No lesions were found due to the element of surprise; the deaths were initially judged to be natural deaths or accidents. Reconstruction of the events with the original bathtub and a figurant can be of importance in such cases [28]. Another famous bathtub homicide from Yorkshire, England in 1957 was considered the first proven murder by insulin and was an example of a combined poisoning and drowning [29]. Kenneth Barlow, a 38-year-old male nurse, reported that he had found his 32-year-old wife dead in the bath. An autopsy revealed signs of drowning and an 8-week pregnancy. On thorough re-examination, two hypodermic injection sites were identified on each buttock. Tissue samples taken from the injection sites were shown to contain insulin. The amount of insulin injected was sufficient to render her unconscious and was potentially lethal. Kenneth Barlow was found to be guilty and sentenced to life imprisonment. Fanton et al. [30] reported a case from France in which a woman was found dead in the bathtub. Autopsy confirmed drowning, but the diatom test showed the presence of two taxons of diatoms (Cocconeis scutellum and euglipta) that are found in marine and fresh or brackish water, respectively. The husband later admitted that he had drowned his wife in a marshland in Brittany,
transported her body to their home in Paris and arranged the scene in the bathroom. Pfeiffer et al. [31] reported a case where a husband was sentenced for killing his wife by drowning in a bathtub and electrocution. Because of the high heat capacity of water, an electrical burn is rarely found in such cases [32,33]. According to Bonte et al. [33], electrocution in the bath seem to cause the margin of hypostasis to correspond with the horizontal line of the water level. Electrocution death in the bath are now very rare due to the widespread use of fault detecting relays.

There can be many different reasons for using drowning as a method of homicide. Many homes have a bathtub, and drowning may be perceived as an easily accessible method. A few planned cases of homicidal drowning involved luring the victim out for a walk and pushing them into the water [13]. Drowning may also be the conclusion to a primarily differently executed assault (often strangulation) [34], as in the case presented in the table. These cases are sometimes called secondary homicidal drownings. The victim may also be dumped in water to camouflage the death as an accident. In Greenland, the water is so cold that a body will rarely resurface, and it was quite lucky that the body was found so quickly after the event. Missliwets et al. [22] described a case of a 23-year-old man found in a river; the lesion pattern and the findings of fat embolism and car paint in an abrasion suggested that the victim had been hit by a car and then thrown in the river while still alive. The disposal of a murdered corpse in water is well known, but not within the scope of this paper.

Key points

- Homicide by drowning of a child occurs occasionally but is rare in adults.
- Homicide by drowning of children are mostly seen in family homicides, fatal child abuse and in cases of concealed pregnancy.
- Homicide by drowning of an adult are seen in drunken disputes, as planned homicides or to camouflage the death as an accident.
- Drowning may be the conclusion to a primarily differently executed assault (secondary homicidal drowning).
- If a dead body is found in water, the case must be thoroughly investigated to determine the mode of death.
- Evidence of a struggle will often be found at autopsy in adult victims but are not always present if the victim is a child.
- Many adult victims of homicidal drowning are alcohol intoxicated.

**Funding:** This case study received no specific funding or grant from public, private or not-for-profit sectors.

**Compliance with ethical standards**

**Conflict of interest:** The authors declare that there is no conflict of interest.
References


