

CASE REPORT

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Missouri's Lakes and the Disposal of Homicide Victims

REFERENCE: Dix, J. D., "Missouri's Lakes and the Disposal of Homicide Victims," *Journal of Forensic Sciences*, JFSCA, Vol. 32, No. 3, May 1987, pp. 806-809.

ABSTRACT: This paper presents the circumstances surrounding the retrieval and subsequent autopsies of four bodies accidentally discovered weighted down in Missouri's lakes. The bodies, representing four separate cases of homicide, were sunken for a period of three weeks to ten months. The relationship of adipocere formation to the postmortem interval and the problems of injury interpretation are discussed.

KEYWORDS: pathology and biology, submerged bodies, decomposition, homicide, postmortem interval

When weighted down in fresh water, bodies will undergo different decompositional changes, depending on the temperature of the water. When the water is cold, the body's soft tissues will hydrolyze into a saponified, hardened condition called adipocere. Adipocere usually takes a few months to develop fully, and, when it does, the body will remain relatively intact for several months or even years [1]. Despite this preservation of the remains, difficulties may arise in determining the cause of death, the postmortem interval, and the differentiation between antemortem injuries and postmortem artifact. This paper represents the first reported series of sunken bodies with a discussion of the problems encountered during the autopsies.

Case 1

The body of a fully clothed 48-year-old white woman was accidentally discovered in a lake when the water table dropped and her back was visible 1 ft (0.3 m) below the water surface. She was last seen 3 weeks before her discovery and was weighted down with concrete blocks attached by ropes. There were slight decompositional changes, including subcutaneous marbling on the lower extremities and a "doughy" consistency to the soft tissues. Autopsy revealed a subdural hemorrhage (less than 20 mL) and focal subarachnoid hemorrhage of the brain. She was identified visually. The assailant was discovered and pled guilty to murder by strangulation with a rope.

Presented at the 38th Annual Meeting of the American Academy of Forensic Sciences, New Orleans, LA, 10-15 Feb. 1986. Received for publication 7 April 1986; accepted for publication 9 June 1986.

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Case 2

The body of a naked, 50-year-old white woman was accidentally discovered by 2 fishermen when the body was caught by their anchor as it was being raised. She was weighted down with concrete blocks attached to her body by battery cables. There was slight adipocere formation of the body with no obvious signs of injuries. She had been missing for approximately 4 months and was identified by an engagement ring on her left hand. There was a suspected assailant; however, he was never charged, as a result of lack of evidence.

Case 3

The body of a fully clothed, 22-year-old white man was accidentally discovered by 3 young swimmers who were swimming at the edge of a pier. He was weighted down with a barbecue grill, a tire wheel, and a homemade cement anchor, all attached to the body by a rope. He had been shot twice in the head. There was slight to moderate adipocere formation, and there was partial skeletonization of the head and hands. He was missing the distal phalanges. He had been missing for approximately 6 months and was identified by dental examination. His assailant was never discovered.

Case 4

The body of a fully clothed, 50-year-old white woman was accidentally discovered at the edge of a dammed lake by a passerby. She was wrapped in a sheet and a U-Haul blanket and weighted down with approximately 75 lbs (34 kg) of barbell weights. There was marked adipocere formation to the entire body, and focally there was sloughing of the soft tissue over the elbows and hands. There were blunt impact injuries to the head which consisted of three focally depressed fractures. There were no associated hemorrhages of the scalp or soft, decomposed brain. She was identified visually and by identifiable tattoos over the extremities. Her assailant was never discovered.

Discussion

All the victims in this series were reported missing in either the November or December before they were discovered. All were found in a 100-mile (160-km) diameter area in southwestern Missouri, which is covered by many thousands of square miles of water. The average water temperature for this region is 55°F (12.7°C) from October through December and 43°F (6.1°C) from January through March [2]. There are no data for below-surface temperatures. The water temperature was recorded in only one case (#1) and it was measured to be 55°F (12.7°C) 1 ft (0.3 m) below the surface.

The body, which was in the water for four months (Case 2), had undergone definite adipocere changes; however, the degree of soft tissue hardening was not as advanced as in the other two bodies which had been down longer. The body submerged for six months (Case 3) had a degree of hardening similar to that of the body which was down for ten months (Case 4). The relative degrees of adipocere formation was helpful when correlating this information with dates the individuals were first reported missing. If the people died soon after they were reported missing, the degree of adipocere formation corresponds to the postmortem interval. Another important factor is the difficulty an assailant would have placing a body in the water in January or February because the lakes generally freeze over early in the year.

Significant difficulties were encountered in determining whether focal areas of skin and soft tissue discoloration and disruptions of the skin were antemortem injuries or postmortem artifact. All of the bodies, except that of the woman who was submerged for ten months, had areas of skin and soft tissue discoloration which appeared similar to antemortem injuries. This was especially true in the woman who was missing for only three weeks (Case 1). Law

enforcement officials wanted to know if the rope tied around her neck was used to kill her. Close examination of the skin and soft tissue under the rope revealed only diffuse red-brown discoloration of the tissues and no focal hemorrhages or marks on the skin. Finding no focal hemorrhages, the cause of death was thought to be related to the subdural and subarachnoid hemorrhages of the brain and not to strangulation. However, a later confession confirmed the woman had been strangled with the rope.

Areas of the body which have open, bleeding wounds undergo more rapid decomposition than other intact areas. This was evident in the man who died from gunshot wounds to the head. When found, his head was partially skeletonized (Fig. 1) and his torso was intact. There must have been a period of time after his death, and before he was placed in the water, that his head began decomposing faster than the rest of his body. This explanation is also supported by reviewing how he was weighted down. The assailant took the time to make a homemade anchor before sinking his victim in the water. Unfortunately, these explanations do not account for the absence of his distal phalanges. Nothing in the water would have removed only his fingers without also damaging the rest of the body. The only plausible reason for this finding might be an attempt by the assailant to conceal his victim's identity by removing the fingers.

Two of the three bodies with adipocere were fully clothed and the third was completely naked. Each of the clothed victims showed varying degrees of adipocere formation. The adipocere was more advanced in areas covered by less or loose-fitting clothing. The woman who was submerged for ten months had a brassiere on; the soft tissues of her breasts did not have the degree of adipocere formation evident on her trunk (Fig. 2). A similar observation was evident in Case 3. In this case, the man's feet were covered by socks and the adipocere was much less developed under them than in the rest of the body. The artifact caused by the clothing might lead an examiner to underestimate the postmortem interval.

These cases illustrate the differential rates of adipocere formation in bodies discovered in water, and how this information might be useful when evaluating the postmortem interval if the date a person is reported missing is known. Hopefully, the findings in this series will help in future investigations in this and other regions of the county where the climate is similar



FIG. 1—*Man submerged for six months (Case 3).*



FIG. 2—*Woman submerged for ten months (Case 4).*

and bodies are discovered in fresh water. However, caution must remain the rule when attempting to differentiate between antemortem injuries and decompositional changes.

References

- [1] Spitz, W. U. and Fisher, R. S., Eds., *Medicolegal Investigation of Death*, Charles C Thomas, Springfield, IL, 1980, p. 23.
- [2] Facts Sheet, Conservation Department, State of Missouri.

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