ACCIDENTAL DEATHS DUE TO ELECTROCUTION DURING AMATEUR ELECTRO-FISHING

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ABSTRACT: Electro-fishing (passing electricity through water to catch fish) requires sophisticated equipment. While this method is commonly employed by scientists for survey and fisheries management, a crude and illegal form electro-fishing is employed in Kerala for catching fish from water bodies. This can result in accidental electrocution and even fatalities. Even though they are rare, forensic pathologists in Kerala do come across such deaths from time to time. 8 cases of accidental death which occurred during electro-fishing are discussed here.

KEYWORDS: Accidental Death, AC Current, Electrocution, Electro-fishing, Fatality, Fishing, Illegal Fishing.

INTRODUCTION: Electro-fishing is the method of passing electricity through water to stun fish to catch them. The stunned fish float to the surface and they are collected using a dip net. In a properly equipped boat, the hull of the boat acts as the cathode and wires dangling from booms on the front of the boat act as anodes[1]. When the fish enter the zone of influence of the system, the swimming is inhibited at first, but is stimulated once the fish come closer to the anode. This phenomenon 'forces' the fish to swim towards the anode until it is stunned. Some countries like Scotland prohibit the use of this method except for scientific research[2].

In Kerala, people use a crude version of this method to catch fish from streams, ponds and flooded paddy fields. They generally use only the crudest safety mechanisms and even illegally divert electricity from overhead electric lines. This occasionally results in accidental electrocution and death[3]. The present series collates cases accidental fatalities during electro-fishing which were brought for autopsy at the forensic medicine department, T.D. Medical College Alappuzha from January 2005 to November 2013; 8 cases are discussed.

CASES:

Case 1: A 29 year old male was fatally electrocuted while fishing using electricity diverted from an overhead electric line meant for domestic supply. Investigation revealed that a group of 6 people were involved in the illegal activity. The contraption used for sourcing electricity was a metal hook attached to the dry stalk of a palm frond. They had attached one end of a 77 meter long wire to the metal hook before it was dangled from the electric line. This part did not result in electrocution probably because the dry palm frond stalk had negligible conducting capacity. The person who dangled the line had climbed the concrete electric post (Fig. 1) to do it.

The electric wire was made up of five smaller wires and the joints were covered with insulating tape. After one end of the electric wire was dangled from the post, they dropped the other end into the small stream (Fig. 1) nearby. The deceased had climbed down into the water downstream where the depth was knee deep to pick up fish with his bare hands. He suddenly fell down and suspecting that he was electrocuted, the others disconnected the wire and picked him up.

He was immediately transported to a nearby hospital, where the doctor confirmed that he was dead and informed Police. The fact that the deceased had sustained electric shock was conveyed to the doctor as well. In this case, the time of accident was 10.15PM.

On autopsy, a contact electric burn mark (measuring 1.5 X 0.5 cm) involving the front of left little finger and adjacent part of palm was seen (Fig 2). The only other recent injury on the body was abrasion on the lateral aspect of right foot. This case which happened in 2005 can be taken as an archetype. All the other cases follow the same pattern with minor variations.

Case 2: A 23 year old male died of electric shock while fishing in a waterlogged paddy field near his home using electricity drawn from an overhead line. The only injury on the body was a contact electric burn mark measuring 2.5X1cm situated on the left index finger. As per the information collected during inquest, the incident had happened during daytime at around 3PM.

Case 3: A 57 year old male was fatally electrocuted while he was winding the wire used to draw electricity from an overhead line at around 4.15 in the afternoon. He had finished fishing when this happened. He was immediately taken to the hospital and was declared 'brought dead'.

On examination, three contact electric burns measuring 2X1.2cm, 0.5X0.2cm and 0.2X0.2 cm were seen on the medial aspect of right palm aligned roughly in the same line. He had also sustained a contusion measuring 7X4 cm on the back of head, 9 cm behind the right ear, probably sustained while he fell down.

Case 4: A 26 year old male was fishing using electricity drawn from an overhead electric line in a pond. According to witness statements, he had sustained electric shock at around 4.15PM. He was taken to a nearby hospital where he was pronounced dead on arrival.

On autopsy examination, no injury produced by electricity was noted on the body. However, evidence of drowning and prolonged submersion was present. The deceased had apparently drowned after being incapacitated by electric shock.

Case 5: A 43 year old male died of electrocution while fishing at night (around 9PM) from a canal using electricity drawn from an overhead electric line. He had sustained multiple contact electric burns. There was a linear electric burn measuring 4X2X0.8cm on the medial aspect of his left index finger; a burn measuring 2X1X0.5cm on the medial aspect of left thumb; two parallel linear electric burns obliquely placed on the front of chest measuring 14X0.5cm and 12X0.5cm and an electric burn measuring 5X4cm on the front of chest which was triangular in shape.

Case 6: A 51 year old male was fishing in the early morning (between 4AM and 7AM) when he sustained flash burn. He was fishing in a waterlogged paddy field at the time. The exact circumstances of the incident are not known since he was alone at the time and the body was recovered from water later on.

On autopsy examination, there was an electric flash burn on the left side of forehead measuring 9X4cm with singeing of eyebrows and eyelashes on that side. Internal examination yielded evidence of drowning. He had apparently sustained electric burn while attempting to draw electricity from an overhead line and had fallen into water in an incapacitated state.

Case 7: A 50 year old male had died of electrocution while attempting to fish from a waterlogged paddy field using electricity drawn from an overhead electric line at around 10.30AM.

Case 8: A putrefied body was recovered from a waterlogged paddy field in an isolated area. The paraphernalia found at the scene suggested that the victim was attempting to catch fish using electricity diverted from an overhead electric line when he sustained shock and fell down into water. From analysis of autopsy findings and the time he was last seen by others, it could be ascertained that the incident had occurred during daytime.

An insulated wire with multiple joints was found at the scene with one end connected to the overhead line. Two charred burn injuries were seen on the front of left (17X6cm) and front of right thigh (3X2cm). The injuries suggested prolonged contact.

DISCUSSION: The practice of drawing electricity from an electric line is punishable as per the Electricity Act 2003 with imprisonment or fine[4]. If it is a group of people who indulge in this activity and one of them dies, the accomplices may be booked under relevant sections of the Indian Penal Code. The authors feel that the many similarities of the presented cases may be due to this fact. In all eight cases, source of electricity was an overhead electric line. The victims had indulged in the illegal and dangerous practice in daylight in only 5 out of 8 cases, that too at secluded places. In those instances when the incident happened at night, it was probably done to avoid detection. It was also noted that all the victims were males.

In two cases at least, the cause of death was drowning. The victims had sustained contact electric burns in all but two cases; in one case, there was no electric injury at all and in the other case, only flash burn was seen.

In all but two cases, the incident was witnessed by others. In those cases, witnesses/accomplices were readily forthcoming with the history, but if they try to conceal the circumstances regarding the incident to cover up their culpability, reconstruction of events leading to death may become very difficult. In such cases, in addition to the autopsy examination, a careful examination of the clothing worn by the victim[5] at the time of the accident and a scene visit may yield important clues. Consulting an electrical engineer or a professional will also be of benefit[6].

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Figure 1: The overhead electric line from which the electricity was diverted is seen on the left. The nearby stream where the deceased was electrocuted is seen on the right. The wire was dropped down near the coconut tree trunk and the deceased was standing downstream.

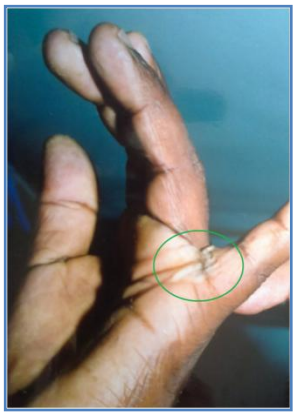

Figure 2: The electric burn mark at the root of left little finger. The adjacent part of palm is also involved.

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