Indian Internet Journal of Forensic Medicine & Toxicology
Vol. 17, No. 1, January-March 2019, 25-30
DOI : 10.5958/0974-4487.2019.00005.1

Case Report

Postmortem Burns Obfuscating the Objectives of Autopsy: An Autopsy Study

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Received: 09-02-2019; Accepted: 20-02-2019

ABSTRACT

The autopsy surgeon plays a vital role in the investigation of a crime. His work importance mainly increases in the bodies which are brought dead, with no witnesses and no proper history. Many a times, scene of incidence, the inquest report, history and postmortem findings may not go hand-in-hand. In many homicides, fire is not an unusual method which is used to conceal a crime or to make deceased unrecognisable because of severe morphological and structural alterations caused by heat. Unidentified charred dead bodies pose a great challenge for forensic pathologists in commenting about the identity, ante mortem or postmortem burns and about the cause and manner of death. As the effects of heat on the body frequently cause complete or partial destruction of the body, autopsy of a severely burnt victim demands that postmortem heat-related changes be differentiated from antemortem trauma. Such burns are done in the perimortem period or when the victim have just died, making their diagnosis more difficult This article presents a case series of four concealed homicides where an attempt was made by the assailants to hide the murder by putting the dead body on fire. However, a clever and systematic forensic investigation revealed the true cause of death. This article stresses on the need of a detailed and thorough postmortem examination in such cases which appear pretty straight forward initially.

Keywords: Charred, Autopsy, Concealed homicide, Postmortem burns, Manner of death

INTRODUCTION

From time to time, forensic specialists are called on to make autopsy of dead human bodies that have been burned more or less extensively. Burns is the important mode of suicide and homicide in the world. Burn injuries are the fourth most common type of trauma all over the world, following traffic accidents, falls and interpersonal violence.[1] Fire is a good means of attempting to conceal (or at least confuse) the injuries and other marks that may indicate that the deceased was a victim of homicide. It will almost certainly leads to destruction of many forensically useful evidence. As a result, all burnt bodies must be viewed with particular care and the possibility that the death might have occurred before the fire began must be considered. Bodies recovered from the scene of a fire may have been burnt both before and after death and it can be difficult or impossible to differentiate these burns, especially where considerable destruction has taken place.[2] In some instances, burnt bones and ashes are forwarded to the medical officer for inspection,

if the police suspect some foul play after a body is partially or completely burnt.[3]

Autopsy examination of severely burnt victims aims to establish the identity of the deceased, presence or absence of antemortem trauma, as well as the cause and manner of death. Given that the effects of heat on the body frequently continues beyond death leading to continuing destruction and consumption of the body, medico-legal examination of a severely burnt victim demands that postmortem heat-related changes be differentiated from antemortem trauma.[4] It is not unusual for the murderer to try to dispose of the body of the victim by fire to conceal the crime. Burns happened during the perimortem period or when the victim has just died, make the autopsy more troublesome. At times, some people may cause burn injuries on a dead body and then produce it before the police to support a false charge of murder against his adversary. Homicidal burns though not very common yet is not rare.[5]

Homicide investigation generally begins with the identity of the deceased, and proper prosecution in a case of homicide requires that the identity of the deceased be indisputably established. It is sometimes very difficult to establish the identity of a burnt charred body when only some fragmentary cremains are available. Even though the body is apparently burned beyond recognition, thorough examination may yield data which sometimes may yield partial identification. This article highlights a series of four cases where the findings over the dead bodies revealed all together a different story as regard to the actual cause and manner of death which was concealed behind postmortem burning of the body.

CASE REPORT

#1- A dead body was referred to our department from periphery for expert opinion. The unidentified charred body of unknown sex and age was found in suspicious circumstances in the fields of a village. External examination showed deep burns to charring visible on the available fragmentary cremains and torso. On internal examination, all the available organs showed deep burns to charring with morphological alterations, features of deep burns and change in consistency. On further thorough, we found two bullets (Figure 1) embedded inside the body, one at the base of charred and distorted left lung and other at the left side fifthrib near costovertebral junction posteriorly (Figure 2). The trachea and the remnant air passages didn't show any proof of soot particles and also there were no other signs of antemortem burns. Not a single long bone was intact so it was very difficult for us to determine the age and sex of the individual and also the remnant teeth and jaw were charred. Only the cause of death due to firearm

Figure 1: Bullets recovered from the body

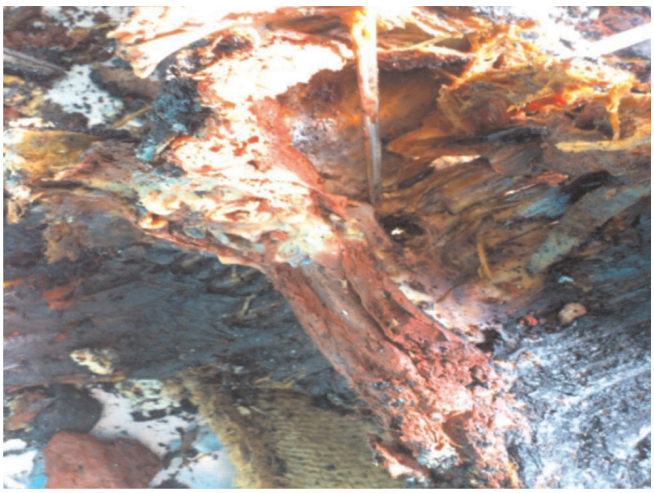

Figure 2: Bullet lodged in 5th rib at costovertebral junction posteriorly

injuries was given in this case which was homicidal in manner. Later on in police investigation, it was revealed that the victim deceased was a 25-year-old male who was shot by the culprits in a moving vehicle and later on to hide the body they travelled 135 km by car and dispose of the body in an open field by burning the corpse.

#2- Another case of unidentified completely charred dead body of unknown sex and age was referred to our facility for expert examination from periphery during summer time. Purportedly the body was recovered from a jungle near a village a day before autopsy. On examination of the body, it was found to be charred, mutilated and only few remnants of many parts of body present. Because of this it became very difficult for us to ascertain the identity of body, cause and manner of death along with time since death. On opening the different exposed charred cavities there was nothing indicative of any apparent cause of death and also absence of any signs suggestive of antemortem burns. After thorough search we tried to send the available remnant viscera for chemical examination. During the dissection of small and large intestine we noticed tiny, silvery or pearly white droplets of various sizes (Figure 3) which coalesce together when brought along and were seen throughout the course of both the remnant charred intestinal coils. These droplets gave us the idea that the deceased had somehow ingested an unknown substance (appears to be pure mercury) (Figure 4) before death because of some unknown reasons. The identity of deceased and cause and manner of death are still unknown.

Figure 3: Small, shiny, round and silvery or pearly white substance of various sizes

Figure 4: mercury metal recovered from body

#3- This case was of an unidentified young adult male dead body which was recovered from roadside in decomposed condition and was sent to our department for expert opinion. The dead body was smudged with maggots, was in advanced stage of putrefaction and the head and neck area showed superficial to deep burns at places. There was a clear cut homicidal cut throat wound present over the neck which was encircling about two-third of the neck circumference (Figure 5) and only part of right side of neck was spared with depth up to and at the level of C5 vertebra. Thus, it was a clear case of homicidal cut throat with postmortem burns present over the face to hide the deceased identity and postmortem interval of about 2–3 days.

#4- Another case was of unknown young adult female dead body which was found hidden in the bushes near the highway. The deceased hands were tied with a white cloth and same material was used to tie

Figure 5: Head and neck area showed superficial to deep burns at places with homicidal cut throat wound over neck

around the mouth. The remnant burnt clothes present over the body emitted kerosene like smell. There were superficial to deep flame burns present all over the body at places. There was blackening of skin along with burning of scalp hairs, eyebrows and eyelashes with singeing present over remnant hairs (Figure 6). Total body surface area covered under burns was 65–70% of total surface area. A homicidal cut throat incised wound of size18 cm×2.5cm present over anterior region of neck below the level of thyroid cartilage and with a depth reaching till base offifthtracheal ring (Figure 7).

DISCUSSION

Many of the victims of fire are found dead at the scene. Most of the deaths due to fire are accidental, but not in

Figure 6: Homicidal cut throat incised wound of size 18 cm×2.5cm over anterior region of neck

Figure 7: Superficial to deep flame burns all over the body with blackened skin, burnt scalp hairs, eyebrows and eyelashes

all the cases. Some fire deaths which appear accidental have been carefully planned and involve suicide or homicide. There could be various explanations other than accident for the presence of bodies at a fire scene. Burns produced shortly before or after death cannot be distinguished either by naked eye or by microscopic examination and murder by burning is also rare.[6]

Sometimes the charred mutilated and fragmentary remains of the body such as one limb, part of trunk or only the head, a mass of soft tissues, etc. is brought for the examination by the I.O. in such cases, not only the body parts are mutilated by deep burns but there are chances of disfiguring the face and dismembering the limbs to destroy the identity in order to hide the crime.[7]The combustion of a body is rarely so complete as to reduce it to ashes. Incineration of an adult human body for the purpose of cremation requires one and a half hour at 1600°C–1800°C, and the resultant ashes weigh about 4–6 kg.[3] If the flame is unchecked, the body is reduced to a shapeless, coal like mass and finally to a heap of grey and yellow ashes. These are known as cremains.[8] Establishment of identity in severe burns may

be difficult. This is because (1) weight and stature are severely reduced; (2) facial features altered; and (3) identification marks destroyed.[8]

Thermal injuries are common and often complex, complicated by commingling and fragmentation. The general questions which arise after the examinations of such charred, partially burnt or fragmentary part may be stated as follows: are burns postmortem or antemortem in nature? In the latter case is death due to natural or unnatural—criminal, suicidal or accidental—causes? In many cases burning may have advanced so far that the autopsy can give only negative results.[9]Unlike a cremation oven, where flame is distributed continuously and evenly on the body under constant conditions, temperatures in a typical fire fluctuate and parts of the body not directly exposed to flame (e.g. pressed against a hard surface) are relatively protected. In most cases, charring is much less on the side of the body not exposed to the fire; however, in some cases, complete charring still occurs. Clothed bodies can be destroyed more quickly than naked ones.[9]

It is also in fact, extremely difficult to burn a body, because of its high water content. Thus, a body that on the outside shows extensive charring, with heat fractures and partial loss of the extremities, will often show perfect preservation of the internal viscera. Fires seldom generate a high enough temperature, over a long enough time, to cremate a body. The temperatures to which the body is exposed fluctuate widely, depending on the materials burning; how rapidly they are consumed; what new materials, if any, replace the burned materials.[10]

Postmortem burns are characterised by absence of vital reaction, absence of line of redness, no soot particles in the trachea and bronchus, no cherry red colour of blood, increase in enzyme reaction and >5% COHb in blood and absence of reparative process. The internal organs are usually roasted with emission of peculiar odour.[11] The significance of one vitality parameter alone is therefore limited. It may be difficult or impossible for the autopsy surgeon to determine the extent of antemortem damage if the ensuing fire later reaches the body and causes postmortem burning. The exposed skin surface may be reddened in antemortem and postmortem burns, the classical distinction of a 'red flare' or 'vital reaction' being unsafe as an index of infliction before death.[1] It is now accepted that heat applied to the recently dead body (certainly up to at least 60 minutes after cardiac arrest) can still produce a red flare of erythema, and so great care must be taken in any attempt to determine the time at which a burn was caused.[2]

A careful search must be made for any antemortem injuries that may have caused or contributed to death. These injuries can be of almost any type, but strangulation and shooting appear to be most common in cases of homicide concealed by fire. It is always advisable to X-ray a burned body, especially if the fire damage is so extensive as to make examination of the skin surface impossible.[2]

CONCLUSION

The criminal is seldom successful in complete destruction or mutilation of body by means of fire to conceal the act of homicide. Even though there is extensive damage from heat and flame, it is frequently possible to establish the cause and mechanism of death by careful postmortem examination of the body. After all facts dealing with the death are collected and assembled, a decision can be made as to the manner of death. This result will depend on the results of many avenues of investigation. The anatomic findings of the autopsy surgeon, the chemical analytic results of the toxicologist, the study of the scene of the fire, and the history given by near ones and police, taken together, give a comprehensive picture of what has transpired. Discovering a charred or burned body in an unfamiliar, outdoor or abandoned place, scene or autopsy findings indicates to a violent death, presence of accelerant use and absence of vitality signs are factors which are diagnostic of postmortem burning following homicide.

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How to cite this article: Ashish Tyagi, Tarun Dagar and Hitesh Chawla. Postmortem Burns Obfuscating the Objectives of Autopsy: An Autopsy Study. Indian Internet Journal of Forensic Medicine & Toxicology 2019; 17(1): 25-30.