

“The Fire will do the Rest”: Concealing Homicide through Posthumous Burning of Corpses

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Abstract

Arson and fire will render very difficult forensic evaluation of a crime scene, and in particular of a victim deliberately burned post-mortem. However, new methodological approaches have made possible to recover as many biological tissue as possible even in burned remains of human bodies, and thus to produce valid data for judicial purposes. The authors of the paper present pictures from two cases, the first one found inside a car that was set fire with the aim of erasing all traces of the crime. Careful forensic evaluation concluded in the favour of a subdural hematoma beneath a bone defect in the right temporal area of the skull, raising suspicions about a premortem injury, since heat-induced hematomas are mostly epidural in nature. The second case was an incomplete burn of lower extremities during a dying fire due probably to a self-extinct mechanism. Theories on both these eventualities are considered in the discussion section of the paper.

Keywords: Fire scene investigation; Burned corpses; Skeletal remains; Arson

Introduction

Although arson is a merely criminal issue and treated as such in penal codes, the omnipresent psychology and psychiatry has been so generous as to grant arsonists a particular mental health disposition [1]. The psychiatrically oriented authors accept that firesetting is a behavior, arson is a crime, and pyromania is a psychiatric diagnosis; with courts being rather unable to make necessary distinctions [1]. These hazardous terminological artefacts will be otherwise of no help, when coming to practical issues.

Deliberate firesetting has been a widely used technique from settlers to clear the land and Yoder appraises the value of the setting ablaze living materia when writing ‘the fire will do the rest’ [2]. In spite of this, cremation is a technique as old as humanity itself and from a medical or public health perspective advantaged [3]. None of the above mentioned usages was initially conceived for concealing the traces of a crime, especially of homicides.

The fact is that unfortunately, fire will erase much of the evidence of a crime, and in any evidence will be left it will be of little value in judicial terms. There are however, many authors and techniques that try to pick up some remains of the forensic evidence even in burned corpses. Mostly, the research and the investigation will be limited to hard tissues that resist longer to the heat: bones and teeth [4]. Crime scene investigation will focus primarily into identification, but further analytical steps (if feasible) need to be taken aiming to clarify the mechanism of the death, the presence of any antemortem injury and other relevant details are of importance. In fact, absence of any vitality signs indicates postmortem burns, frequently used by perpetrators to conceal homicide [5].

Cases Study

We present pictures from two burned bodies, and the respective investigative setting of those. The first one is the case of a male aged approx. 40 years, whose death was considered violent, and whose corpse had signs of premortem injuries. The perpetrators set ablaze the corpse inside a car (Figure 1) and abandoned in a secondary rural road.

The charred corpse was found seated inside the driver place. The most important finding was that no signs of any shooting were found, but several fractures of the head skull suggested heat-induced changes of the cranium. Nevertheless, the forensic experts performing the autopsy concluded that the hematoma found in the right temporal-parietal area was a subdural one, which would theoretically orient its origin as an intra vitam, or premortem and therefore would orient the investigation toward a murder. A bone defect ranging 10 × 10 centimetres was seen at the same place, and brain parenchyma protuberance was evident, in a carbonized consistency.

In fact, the distinction of the origin of an intracranial hematoma following a burn is a matter of controversy, with several factors playing a role, even with the extra force applied during the extraction of the



Figure 1: Partially burned car abandoned in a rural area.

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victim from a closed place (eventually the car seat) or in an attempt to save someone from an accidental fire, eventually from self-immolation [6,7]. However, in our illustrative case hemorrhagic infiltrations of osseous margins of the cranial fractures were another indicator of the premortem nature of the injuries. The presence in the blood toxicological analysis of a value of 43% of carbon monoxide suggested as well that the victim was still alive, albeit unconscious, when deliberately burned.

The second image (Figure 2) is a partially burned corpse of a female. In an attempt to erase all possible evidence from the crime scene, the perpetrator covered the victim with a blanket and set fire. However, no fuel dousing was applied in the hurry-up of a hate crime, which might explain that the fire died out without burning down the entirety of the corpse; instead only signs of partial burns were visible in the distal two-thirds of lower extremities (Figure 3).

In this second case, a variety of factors might have lead to an uncompleted burn, probably related to the self-extinction of the fire. Closed compartments might have some influence on this self-extinction probability, and apposite predictive models have been elaborated [8].



Figure 2: Charred corpse, with the cranium showing an extensive bone defect in the right temporal-parietal area (star) and a subdural hematoma beneath.



Figure 3: Burns in the lower extremities, in a failed attempt to set fire to a crime victim.

Discussion

The challenge of a forensic evaluation of burned skeletal remains is not only a methodological one. The fire in fact erases much of the evidence, if not even the entirety of that, when burning is complete. However, authors have demonstrated that perimortem trauma might survive the burning process, hence the necessity for a thorough and accurate examination of all skeletal remains in a fire scene [9].

There are several and well-documented postmortem thermally induced changes, such as:

- a. The 'pugilistic' attitude of the extremities;
- b. The epidural heat hematomas, in the form of epidural extravasates;
- c. Cranial suture separation and dura mater rupture;
- d. Heat-induced fractures of the cranial vault;
- e. Transformation of blood inside the vascular system in dried claylike masses;
- f. Heat-induced skin separation;
- g. Soot particles in the airways and
- h. Protrusion of the tongue [10].

The presence of such heat-induced fractures and hematomas will render notably much more difficult the distinction of premortem skeletal injuries; nevertheless every attempt needs to be made to recover as much data as possible. Different sources have been focused on providing a methodological approach to all this particularly difficult forensic assessment, and have proposed (1) to develop fatal fire scene recovery protocols and guidelines, with the principal aim of locating and recovering all biological tissue remains still present; (2) to document soft tissue burn sequences and bone heat-induced modifications and (3) to analyze effects of fire and heat on the diagnostic characteristics of skeletal trauma [11]. Particular processing of fire scene will safeguard evidence, which will otherwise get lost when routine or classical scene processing is used. The importance of a specialized and prudent approach to burned skeletal remains is therefore widely professed.

Conclusions

Albeit heat and fire-induced changes to corpses are able to destroy substantial part of forensic evidence, still some data might be recovered, particularly through applying ad hoc methodologies and protocols. Experimental models have been tried and validated for this purpose [12]. The criminal trend of posthumous burning of corpses is fomented from the general presumption that fire will leave no traces of any criminal and premortem injuries. More than a medico-legal issue, the fire scene investigation requires a multidisciplinary approach and evaluation, with criminologists and other specialists having their say in formulating conclusions and providing the necessary evidence to courts with regard to violent deaths. Attempts to mask, to disguise or manipulate violent deaths through posthumous burning of the victims need accurate protocols to uncover the truth, a very much difficult albeit still feasible task.

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