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Spontaneous human combustion, homicide, suicide or household accident

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Abstract: In an attempt to reach the most rational explanation possible, a complex analysis and evaluation of the pros and cons for spontaneous human combustion, murder, suicide and domestic accident is required for the death in atypical circumstances of an 80-year-old man from a rural area, who had burns on 90% of his body. The analysis of research data from the scene and from the autopsy led us to the most reasonable explanation, that of a domestic accident caused by the accidental ignition of nylon fabric used for clothing.

Key Words: spontaneous human combustion, murder, suicide, domestic accident.

The term spontaneous human combustion appeared in scientific literature for the first time in 1746. It is defined as total or partial carbonization of a corpse taking place in the absence of obvious ignition sources [1]. A survey conducted by Joe Nickell and forensic analyst John F. Fischer, which investigated more than 30 cases in the last 300 years, showed that the most likely ignition sources were candles, lamps, fireplaces and so on [3]. Scientific literature presents 200 reports of human spontaneous combustion cases spread over three centuries [4]. Brian J. Ford put forward ketosis as one possible explanation; due to alcoholism or a low carbohydrate diet, it leads to the production of volatile acetone; when it is eliminated through breathing, as it is flammable it might lead to spontaneous human combustion [5, 6].

CASE STUDY

A 80-year-old man was found dead in his own yard, with 2nd and 3rd degree burns on 90% of his body [7]. The house presented no signs of arson, except for a partially burned chair found near the victim (Fig. 1). The corpse showed burns on 90% of the body (except on his left calf and foot, where the victim was wearing a boot). The right foot had 3rd degree burns with traces of charred footwear. The metatarsals and phalanges were partially calcined (Fig. 2). One could also notice hematic infiltrates of 3 / 2.5 cm in the pericranial soft tissues in the left frontal area. (Fig. 3). The myocardium had a pearly white scar on the anterior wall of the left ventricle. The airways had soot deposits. (Fig. 4) [7]. Survey data: retired man, who lived alone in a house with annexes, with conspicuous damage of the roof and concrete floor, rural area, poor conditions. The heating source was a wood tiled stove. The victim was rarely visited by family or neighbours.

DISCUSSION

Accidental fire. Pros: improper use of the stove; the most common cause of death by fire (Fig. 6). Cons: lack of evidence of fire in the house or in the annexes; small amount of potentially flammable materials (no wood floor or furniture); the atypical place where the body was found - in the courtyard (Fig. 1).

Suicide by pouring flammable substances on

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Figure 1. Initial position of the body.

Figure 2. Right leg burns.

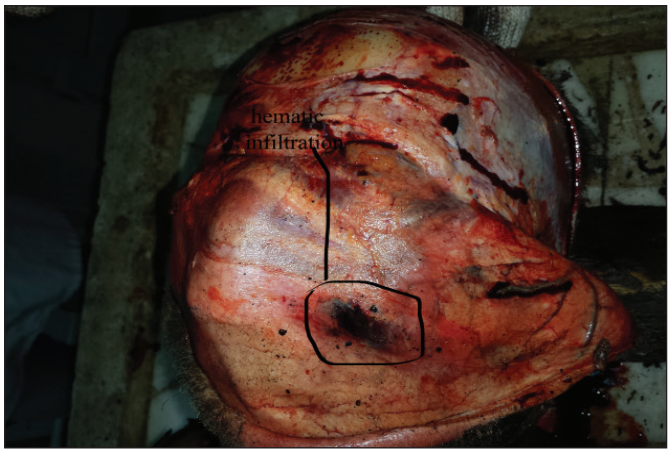

Figure 3. Hematic infiltrates.

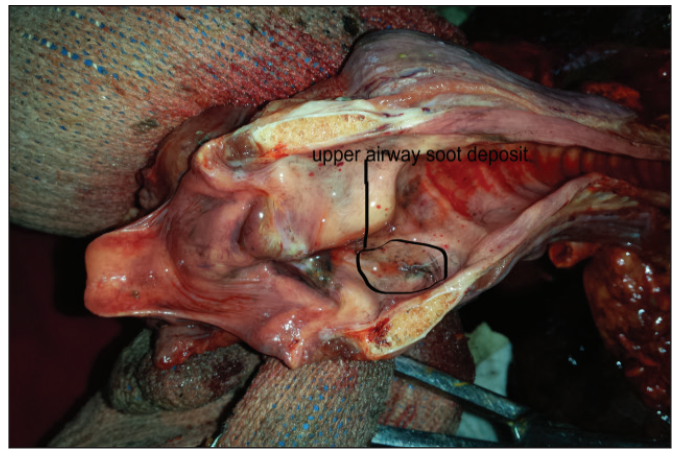

Figure 4. Soot deposits on the upper airways.

Figure 5. Incompletely burned nylon and a piece of string.

Figure 6. Tile stove.

Figure 7. Victim's wallet.

the body (gasoline, alcohol etc.). Cons: lack of bottles or containers or traces of flammable substances; it is not a common way to commit suicide; lack of suicide attempts in the past; atypical distribution of the burns, possibly caused by flammable liquids (they go upward, typically including just one part of the body); the absence of an ignition source and of traces of fire on the surrounding objects.

Murder, by throwing flammable substances. Pros: anti-social personality. Conflicts with potential drinking companions. Murder with the purpose of robbery.

Cons: lack of evidence or of containers of flammable substances; no other signs of struggle with a potential aggressor; lack of complaints from the neighbours about a possible conflict; atypical placement of the burns on the body, as they are usually located on one level; burns have vertical paths; partially burned clothes; wallet with money in it on the floor (Fig. 7).

Spontaneous human combustion. Pros: Elderly person living alone, the extensive burning area, alcoholism, low carbohydrate diet, no traces of fire on the surrounding objects [8]. Cons: spontaneous human combustion is a diagnosis of exclusion[9].

Alternative explanation. Information collected from the neighbors about unusual behavior, which can be found sometimes in homeless people, consisting of using nylon fabric tied with string around the limbs and trunk for better thermal insulation against cold, could lead to a reasonable explanation (Fig. 5). Further information from the site show that two pieces of wood, approximately 1m long, burned at one end, were next to the stove (Fig. 6). In addition, traces of burned material, possibly nylon, were noticed on the way from the stove to the place where the body was found (Fig. 5).

Scenario. The victim wanted to protect himself from the cold, given the poor condition of the house, so he wrapped nylon fabric around himself and tied it with strings; the only regular clothing he had on was underwear, boots and socks. He sat on a chair in front of the stove, with his right leg resting on a piece of wood, sticking out of the stove, in order to heat his leg. The victim fell asleep and the fire reached the right foot (the deepest burns with the charring of the boot); he awoke and stood up, and then the fire spread quickly through the nylon fabric that was wrapped around the whole trunk and limbs, possibly also the cephalic extremity. The victim fled in the yard, leaving traces of burned nylon on the way there; he collapsed and died from combustion shock (Fig. 5).

CONCLUSIONS

Considering the research data from the site and the autopsy results, the most plausible explanation would be death caused by the ignition of the nylon fabric wrapped by the victim around his body for better thermal insulation, given the precarious living conditions, from the misused stove.

The particularity of this case is the fact that a rational explanation of the burns found on the victim's body could be found only by piecing together research data from the scene and the autopsy. The possibility of alternative explanations and speculations remains open.

Spontaneous human combustion remains a diagnosis of exclusion, once all other possible explanations have been eliminated.

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