CASE REPORT

Pellets or maggots? – A case report on artifacts in forensic medicine

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Abstract: Forensic medicine specialists use their expertise to identify artifacts and avoid its misinterpretation. This is vital in carrying out justice as any misinterpretation of findings can derail the investigation. We report a case where an artifact resembled a firearm/shotgun injury that raised a suspicion of an alleged homicide.

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1. Introduction

“A postmortem artifact is regarded as any change produced in the body or any feature introduced into the body, after death that often leads to much confusion about its nature and causation, and often results in misinterpretation of medicolegally significant antemortem findings or is itself wrongly considered as a significant antemortem finding”.

Forensic experts use their expertise to identify artifacts and avoid their misinterpretation. Identification of artifacts is vital to ensure justice, as any misinterpretation of findings can derail the investigation. Though various artifacts have been reported, artifacts that resemble a gunshot wound are rarely described in the literature. Such artifacts when encountered may lead to erroneous conclusions. We hereby report a case where an artifact resembled a shotgun injury, and raised a suspicion of an alleged homicide.

2. Case report

2.1. Autopsy observations

A partially skeletonized body along with a skull was brought to the mortuary for postmortem examination by the investigating officer. A portion of the torso was shriveled while other areas showed adipocerous changes. Upper and lower extremities, and a portion of the upper thorax were partially skeletonized. Lower ends of the skeletonized right femur and left tibia had nibbled appearance suggestive of gnawing by predators, possibly rodents. Numerous live maggots were present on the lower limbs and a very few were crawling over the body (Fig. 1A). A singular circular soft tissue defect could not go unnoticed to anyone who saw the body. The defect measured 2.5 cm in diameter and was present over the front of the chest along the midline on its lower aspect, and through which the underlying sternum was visible (Fig. 1B). On closer examination, the edges...
of the defect appeared regular, and a few smaller circular defects of size varying between 1 and 2 mm were seen surrounding the larger defect. Other parts of the front of the chest and abdomen did not show any such defects. The skin surrounding the defects seemed similar to the skin over other parts of the torso (Fig. 1C). The appearance of the defect raised the speculations of a shotgun injury. The circular defect corresponded to the lower part of the sternum. No bony injuries were observed on the underlying sternum or ribs (Fig. 1D). Posterior wall of the chest and abdomen was intact and no pellets were recovered from the body. A few maggots were, however, seen crawling inside the body. A careful examination of the dried soft tissue attachments at the base of the skull that corresponded to the upper neck region revealed a grooved obliquely placed ligature mark measuring 24 cm. On internal examination at autopsy, all the internal organs were found to be disintegrated to such an extent, that it was by no means, feasible to comment on the presence/absence of any fatal injury or pathology.

2.2. Death scene investigations

Earlier in the day, a passerby had noticed a human body lying in a secluded area surrounded by trees and shrubs in the outskirts of the city, and reported it to the local police. A team comprising police personnel and forensic medicine experts visited the death scene and found a torso of an adult male lying in supine position. A noosed rope was freely hanging from a nearby tree and a pair of slippers were present at the base of it. On extensive search of the neighboring area, a skull with dried soft tissue attachments at its base was found around 300 m away from the body. The morphological features of the skull were suggestive of a male sex and a dental examination suggested a young age. Personal belongings, clothing and pocket contents helped in identification of the deceased. The deceased was a young male who was reportedly missing for the last 4 weeks.

Possibility of homicide was considered by the investigating officer for the unusual circumstances of the case, and the family members and employers of the deceased were questioned. It was revealed that the deceased appeared depressed and the parents were planning to seek medical help when he went missing. Detailed investigations concluded that putrefactive changes and disintegration of neck tissues possibly led to post-mortem separation in the neck region, and subsequent falling of the hanging body. Dimensions of the ligature mark observed at autopsy were corroborating with the loop of the rope hanging from the tree that further confirmed the claim, and ruled out the possibility of any foul play. The headless body was lying near the tree, while the skull was found at a distance, which was possibly attributed to predatory animal activities. On perusal of autopsy findings, it was concluded that the deceased died as a result of hanging and that the defect in the thoracic region was in fact an artifact that simulated a shotgun wound.

3. Discussion

The type of shotgun and ammunition can influence the appearance of shotgun wounds. It is a known fact that the appearance of the wounds produced by a shotgun varies and depends on the range of fire of a shotgun. With an increase in the range of a shotgun, tattooing and smudging wane and disappear after a certain distance. Regarding the shotgun wound, there is a significant increase in the diameter of the central circular entrance wound till a distance is reached after which the individual pellets begin to separate from the main mass and appear as satellite pellet holes around the main entrance wound. With reference to the reported case, the size and appearance of the circular defect with surrounding holes was very similar to a shotgun wound produced at a firing range of around 2–6 feet.

Forensic pathologist involved in the examination of firearm injuries should be aware of the possible artifacts that may lead
to misinterpretation of facts. Such artifacts as reported in the literature include ‘pseudo-soot’, ‘pseudo-tattooing’ and ‘pseudo-scorching’.\textsuperscript{2,4} Patel\textsuperscript{2} has reported a case of pseudo-scalloping of a shotgun entry wound that led to the overestimation of the range. Though a few reports on alterations in gunshot wounds are reported, artifacts and injuries that resemble a gunshot wound are rarely described in the literature. In this regard, a non-missile penetrating injury simulating a gunshot wound is reported which can be misleading to forensic investigators.\textsuperscript{5} Pollak and Reiter\textsuperscript{6} have reported two cases in which changes brought about by the maggots primarily gave the impression of gunshot wounds. They observed that in special conditions, the damage by maggots can take the appearance of bullet holes. However, none of the reported cases describes the artifacts resembling a shot gun wound.

In the reported case it was concluded that the artifact resembling a shotgun wound was produced by maggots and not pellets as it appeared during the preliminary investigation. The absence of any underlying bony injuries corresponding to the circular defect and non-recovery of pellets from the body and the death scene in the reported case were the facts that helped in ruling out any shotgun injury. The presence of maggots in abundance was linked to the causation of the defect directly. In the reported case, the maggot activities' post-mortem had resulted in an artifact resembling shotgun injury. Voracious eaters as explained by entomologists, the maggots tend to work in group at different parts of the body at unit time. Maggots have not only been culprits in altering the shape and dimension of wounds but also are quite infamous among forensic fraternity in fabricating one.

Various postmortem artifacts are observed in practice and described in the literature. The newer ones observed by the forensic pathologists need to be reported so as to enhance the knowledge on different possibilities of misinterpretation. This case of postmortem artifact is reported for its rarity, along with a discussion on its possible causation.

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**Conflict of interest**

None declared.

**Ethical approval**

Necessary ethical approval was obtained from the institute ethics committee.

**References**