

Dilemma for Autopsy Surgeon

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Abstract

Postmortem artifacts are commonly encountered problems in routine. They had to wrong interpretation in number of cases especially at the hands of an inexperienced autopsy surgeon and hence may mislead the course of justice. So it is suggested that all the doctors concerned with medicolegal work, especially autopsies, should be well versed with these artifacts. Then only our opinion will be conclusive and aid in the administration of justice.

KEY WORDS: - Postmortem artifacts.

Introduction:

Forensic medicine is best learned by a judicious combination of theoretical and practical knowledge. A good forensic expert is one who has not merely a vast experience in conducting autopsies, but one who has trained himself to make precise and correct interpretation of the findings. One must not allow dogmatism or inflexibility to cloud one's judgment. A self-opinionated expert is a poor expert.

There are several inherent pitfalls that must be avoided in the course of medicolegal autopsies which can lead to erroneous or fallacious conclusions. Every forensic pathologist must familiarize himself with these postmortem artefacts that are liable to misinterpretation.

Postmortem Artefacts are due to any change caused or features introduced in a body after death. The artefacts are physiologically unrelated to the natural state of the body or tissues or the disease process, to which the body was subjected to before death. Ignorance and misinterpretation of such postmortem artefacts leads to:

- Wrong cause of death
- Wrong manner of death
- Under suspicion of criminal offence
- A halt in the investigation of criminal death
- Unnecessary spending of time and effort as a result of misleading findings or even
- Miscarriage of justice[1, 2]

Classification:

A. Artefacts of decomposition

➤ **Bloating and discoloration:**

Putrefaction of the body leads to most common artefacts. It leads to swelling of lips,

nose, eyelids, protrusion of tongue and eyes, distension of chest and abdomen and swelling of extremities.

➤ **Vesication:**

Formation of fluid filled blebs beneath the epidermis is common phenomenon of putrefaction. Differential diagnosis of such blebs from antemortem burns is important.

➤ **Purging**

In a warm atmosphere, body fluids frequently start purging out of mouth and nostrils of dead body.

➤ **Non uniform decomposition**

Putrefaction tends to be accelerated at the place where skin has been broken or blood has accumulated in the tissues.

➤ **Rupture of oesophagus or stomach**

Occasionally and for unexplained reasons agonal or postmortem digestion of the wall of the stomach or oesophagus occurs very rapidly and contents of stomach are found free in the peritoneal or pleural cavity.

➤ **Autolysis of pancreas**

Agonal or postmortem autolysis of pancreas may be well advanced.

➤ **Abnormal distensibility of rectum/ vulva/ vagina:-**

After rigor mortis has passed off, these muscular canals become readily distensible to a larger extent than that during life. There may occur inversion of uterus along with postmortem delivery. (Figure 1)



Figure No. 1
Inversion of Uterus Along With Post Mortem Delivery

➤ **Miscellaneous:**

- Due to wearing of tight garments around the neck at the time of death, it may appear as a deep groove around neck simulating ligature mark as seen in strangulation.
- Putrefactive gases within the brain may cause post mortem separation of sutures of skull of a child.
- Epidermis may easily peel off giving appearance of burn-especially in bodies exposed to sun, vital reaction is absent in such cases.
- Fissures formed in skin due to decomposition may simulate lacerated or incised wounds.
- Ethanol may be produced in putrefying bodies or during improper storage of autopsy blood, the value of which is less than 200mg%.
- Concentration of carbon monoxide after decomposition also increase up to 19%.[1]

B. Third party artefacts:-

➤ **Artifacts due to animal and insect bites**

Ants and insects mostly attack the exposed parts and moist areas of the body, such as face, arms, genitals, groins, and axilla. Rats, cats and dogs attack exposed parts and destroy soft tissues of the face, head, and hands, with little or no damage to clothed areas. Although rats attack any dead body, cats and dogs do not attack their masters unless they are starving. Marine animals mostly attack exposed areas and projecting body parts, such as lips, nose, ears, fingers and scrotum, etc. All these injuries are without a vital reaction and their edges appear nibbled. A careful look for the track of these invaders may explain peculiar lesions on body surfaces. [3] (Figure 2)

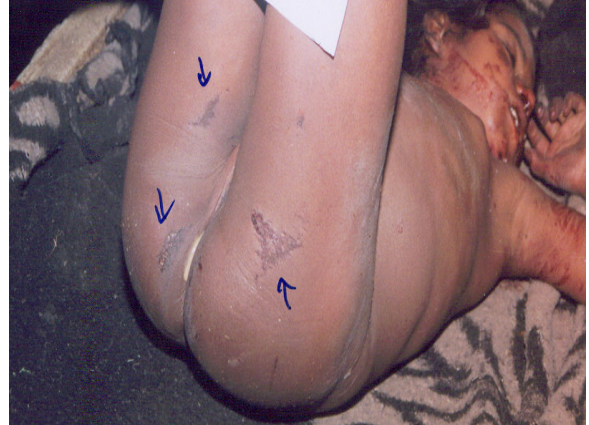


Figure No. 2
Postmortem ant Bites

➤ **Emergency medical treatment agonal and postmortem state and surgical intervention:-**

- a. External cardiac massage, defibrillator, multiple intracardiac injections.
- b. Gastric contents are aspirated in windpipe frequently. Carotid angiography may cause bruising of neck muscles giving false impression of constriction of neck.
- c. Surgeons may often take laparotomy incision through incised stab wounds.
- d. Endotracheal intubations, positive pressure artificial respiration may lead to surgical emphysema and pneumothorax.[2]

➤ ***Deliberate mutilation, dismemberment etc. by criminals:***

- a. A cadaver poses difficulty for disposal by its size and so mutilation or dismemberment may be required to remove it from the scene of crime.
- b. Sometimes criminals may inflict injuries after death to mislead investigation.
- c. Often person may be killed and thrown in water or set on fire. Careful examination for violent cause and lack of carboxy haemoglobin in blood and soot in windpipe may arouse suspicion.(Figure 3)



Figure No. 3
POSTMORTEM BURNS

- Sometimes person may be beaten to death or poisoned and then hanged. Minute examination of ligature mark and presence of associated injuries and chemicals analysis of viscera will help in correct diagnosis of cause of death.[2]
- **Embalming artifacts:**
The trocar wound may simulate a stab wound.
- **Autopsy surgeon induced artefacts:**
 - a. During opening of skull
 - b. During pulling of dura.
 - c. During forceful pulling of neck structures.
 - d. Liver, if pulled apart instead of being carefully dissected.
 - e. Cutting of bowel coils while opening abdomen.[2]
- C. Artefacts of environment:**
 - a. **Postmortem burning:**
 - b. As a result of high temperature, subcutaneous fat may become hard and ruptures which may simulate incised or lacerated wound. Heat fractures of skull may be found which may simulate injury to the skull.



Figure No. 4
HEAT SKULL FRACTURE

- c. **Postmortem Corrosion:**
 - d. **Postmortem maceration;**[2,5]
- D. Other artefacts**
- **Artefacts due to rigor mortis:**
Existing rigor mortis may be broken down at least partially while removing the body from the crime scene to the mortuary, and all these may cause errors in interpretation of time since death.
 - **Artefacts due to postmortem lividity:**
Isolated patches of postmortem lividity may be mistaken for bruises. Such patches on the front

and sides of the neck may be mistaken for bruising due to throttling (manual strangulation). Lividity of the internal organs may be mistaken for congestion due to disease.

- **Artefacts due to refrigeration:**
Pink hypostasis is seen in bodies kept in cold storage
- **Improper handling of the body:**
In the process of removal of the body from the crime scene to the mortuary, fresh abrasions may be produced, blood stains may form on parts of the garments originally free from them and fresh tears in clothes may result from rough handling.
- **Exhumation artefacts:**
In bodies which have been buried, fungus growth is usually seen at body orifices, eyes and at the sites of open injuries. After the removal of the fungus, the color of the underlying skin resembles bruising. Grave diggers can produce post mortem fractures, abrasions, and lacerations. Postmortem imbibition of toxicological elements in earth causes problems for toxicological analysis. [3,5]
- **Artefacts in firearm wounds:**
 - a. Drainage wounds may be mistaken for firearm wounds.
 - b. In decomposition there may be peeling of skin and loss of hair and gunpowder from the skin around an entrance wound.[4]
- **Artefacts due to delay in postmortem examination:**
Grooving of the unci, though unique feature of cerebral oedema may however be found in normal brain and tends to be prominent when there is delay in removal of brain.[2]
- **Artefacts related to petechial haemorrhages:**
Haemorrhages may occur after death in the skin of the dependent parts of the body. Like ante mortem haemorrhages, they are found in the areas where the capillaries are least supported i.e. in the eyelids and conjunctivae. Oedema of the conjunctivae which is a common finding after death from compression of the neck also may occur as a post mortem artefact if the head is maintained in a dependent position, thus adding further difficulty in diagnosis.[7]
- **Artefacts related to hair:**
The beard may appear to grow after death in some cases whereas the growth of hair stops immediately after death. The cause of this post mortem apparent growth of beard is the shrinkage of the skin, due to which greater part of the hair shaft is exposed above the epidermis.[4]

Differential Diagnosis of Artefacts:

1. **Differential diagnosis of bloating and distention of abdomen;-**
 - a. Putrefaction
 - b. Ascites
2. **Differential diagnosis of protrusion of tongue and reddish discharge from mouth;-**
 - a. Strangulation
 - b. Hanging
3. **Differential diagnosis of discolouration;-**
 - a. Traumatic asphyxia
 - b. Bansdola
 - c. Burking
 - d. Opium poisoning
4. **Differential diagnosis of Vesication**
 - a. In putrefaction
 - b. Blisters in antemortem burns
 - c. Blisters in barbiturate poisoning
 - d. Poisoning by tricyclic antidepressants
 - e. Carbon monoxide poisoning
 - f. Meprobamate
 - g. Mustard gas
 - h. Lewisite
 - i. Antimony
5. **Differential diagnosis of purging**
 - a. Drowning
 - b. Opium poisoning
 - c. Barbiturate poisoning
 - d. Tik 20
 - e. Endrin
 - f. Kerosene poisoning
6. **Differential diagnosis of non uniform decomposition;-**

Because of the pressure of gases of putrefaction, postmortem stains may be displaced in any direction. If hypostasis extends to the head, it may be mistaken for violence to the neck or smothering. The skin from the hands or feet may peel off like glove or stocking in 48 – 72 hrs. This peeling off is also seen in severely burnt bodies and in drowning where the body remains in water for 2 days or more.
7. **Differential diagnosis of rupture of oesophagus and stomach;-**
 - a. Corrosive acid perforation
 - b. Ulcer perforation
8. **Differential diagnosis of autolysis of pancreas;-**
 - a. Acute haemorrhagic pancreatitis
9. **Differential diagnosis of pendulous female genitals appear and discharge from genitalia;-**
 - a. Sexual assault

- b. Postmortem delivery in case of pregnant woman
- c. Criminal abortion

Conclusion:

Medicolegal Autopsy or Forensic Autopsy is learnt only through extensive practical experience and the doctor conducting the autopsy carries great responsibility over his shoulders. It is obvious that if he is unable to extract proper interpretation of the findings, the pangs of justice will be disturbed and therefore, it is imperative that all unusual findings must be meticulously examined and photographed and if need be, some experienced, better qualified colleague may be approached there and then. The doctor should learn to draw conclusions logically and rationally, instead of forming hasty judgment.

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