

CASE REPORT

Electric entry mark in a decomposed body

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ABSTRACT

Background: The electric traps using a live non-insulated cable, one end of which is connected to domestic utility bare line is used to hunt animals in several geographical areas in Sri Lanka. In some instances the humans fatalities are also reported. The alteration of the scene by the trappers and the frequent late recovery of the bodies challenge the Forensic Pathologist in determination the cause of death.

Case description: A moderately decomposed body with discolouration, desquamation and maggot infestation which was recovered from a jungle was brought for medico legal investigation. There was a greyish white oval shape mark with central black area on the right leg. The mark on the right leg showed macroscopic features of an electric entry mark. The mark was still identifiable with the naked eye. The characteristic histology features were observed on the sections obtained from the mark.

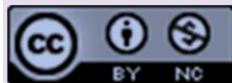
Conclusion: The electric entry mark is demonstrable in decomposed bodies and a meticulous external examination is helpful to identify the suspected lesions. The histology findings are resistant for decomposition and helpful to confirm the diagnosis of electrocution.

Keywords: electric entry mark, decomposed body, histopathology

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INTRODUCTION

Electric traps are used for hunting animals for food and to protect crops in several geographical areas in Sri Lanka. A live non-insulated electric cable, one end of which is connected to a low voltage (230 V) utility bare line is laid across the known trails of animals. In some instances human fatalities are also reported. The alteration of the scene by the trappers

and the frequent late recovery of the bodies are challenging the forensic pathologist in determination the cause of death.

The electric entry mark (EEM) on the skin is a pathognomic¹ of electrocution and inflicted at the point of contact and may be the only evidence of electrocution. But the decomposition process which leads to desquamation may mask the injury² which implies that the EEM may not be visible on a decomposed body. In such situations histology may be helpful if tissue sections from the suspected EEM is obtained.

The case report below describes the determination of the cause of death in a decomposed body. It emphasizes the importance of a meticulous post mortem examination of a decomposed body which still provides evidence to determine the cause of death.

CASE HISTORY

A decomposed body was brought to the medico legal mortuary, of a Hospital in Southern Province, Sri Lanka which was recovered from a jungle by the police. The body was identified by the wife from the clothing and the personnel effects. The deceased had left home 3 days before the recovery of the body.

The body was in a state of moderate decomposition with discolouration, swelling, marbling and generalized desquamation of epidermis with severe maggot infestation (Fig.1). The external genital organs with lower abdominal wall and the abdominal visceral organs were absent.



Fig 1: The decomposed body with desquamation, discolouration and maggot infestation

There was 4x1 cm oval shaped mark situated on the inner aspect of the right leg which was situated 20 cm above the heel. The mark was greyish white with black in the central part and on palpation the mark was firm and parched (Fig. 2). The dissection of the available internal organs were unremarkable except the putrefactive changes.



Fig 2: The greyish white mark on the right leg

The histopathology examination of the sections from the mark on the skin showed epidermis, dermis with underlying subcutaneous tissue. There were areas without epidermis. The nuclei of the basal layer elongated (nuclear streaming) and were tightly packed giving characteristic palisading appearance and dermo-epidermal and intra-epidermal separation (Fig.3,4). The underlying adnexal structures were intact. Coagulative necrosis was present in the dermal and underlying tissue.

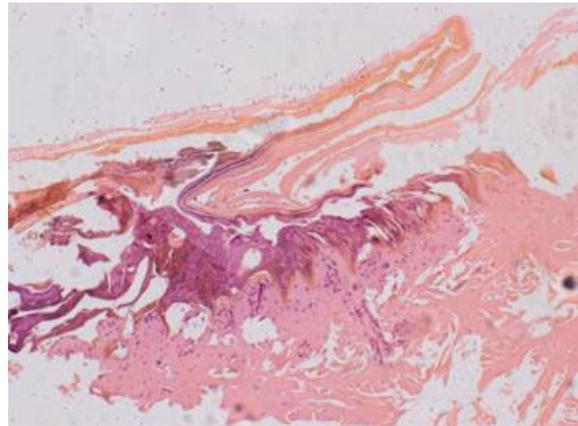


Fig 3: Intra-epidermal, epidermo-dermal separation with coagulative necrosis of dermal tissue. H&E (x40)

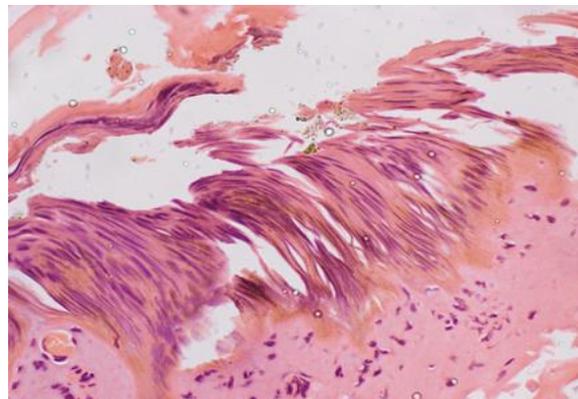


Fig 4: Elongated and packed basal layer of the skin. H&E (x100)

According to the investigating police there were several reported incidences of illegal electric trapping with several human fatalities in the area. The cause of death was concluded as electrocution.

DISCUSSION

The electric entry mark due to contact with domestic current is a thermal burn which is a key diagnostic indicator of electrocution and characterized by a yellow grey puncture area or a crater with central necrosis¹. The deceased had a mark on the leg with similar features suggestive of EEM. The peeling off of the skin during the process of putrefaction may have caused disappearance of some of the external features of the injuries like the appearance of crater. Histology is an important ancillary investigation in diagnosis of electrical injuries. The epidermal nuclear elongations/nuclear streaming or palisading is a typical histological hallmark of electrical mark and of great diagnostic value in electrocution³. The burnt epidermis, denudation⁴, intraepidermal, dermo-epidermal separation, coagulative necrosis, vacuolated appearance in dermis and intact adnexal structures are frequent histology findings¹. The histopathology of the injury in this case showed most of the above-mentioned characteristic features of EEM. The features like singeing of hair follicles, metallization which are described in the literature⁴ were not observed.

Although the current mark is a proof of electrocution, the vital reaction decides the ante mortem or post mortem nature¹. There was no inflammatory reaction which may be due to the fact that the time interval between the electrocution and the death was short to develop inflammatory reaction.

Varying degree of nuclear elongation is seen in flame burns and in abrasions⁵. However, a significant degree of nuclear elongation and intraepidermal separation which were observed on the deceased are characteristic of EEM.

The post mortem animal predation may have caused the defect on the abdominal wall with removal of abdominal organs.

CONCLUSIONS

The characteristic macroscopical features of electric entry mark was demonstrable even in a decomposed body on the third post mortem day and a meticulous external examination is helpful to identify the suspected lesions. The microscopic features of electric mark is resistant to at least mild to moderate decomposition.

ETHICAL ISSUES

None

CONFLICTS OF INTEREST

There are no conflicts of interest.

AUTHOR CONTRIBUTIONS

JW: Total work done by the author.

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