

ELECTROCUTION IN A FOOTBALL VIEWING CENTRE IN CALABAR, SOUTH NIGERIA

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Abstract

Electrocution is the passage of a substantial electrical current through tissues with resultant skin lesions, organ damage, and death. Deaths from Electrocution may result from a person exposed to a lethal amount of electricity which may be due to high or low voltage. It is usually accidental in nature and homicidal electrocution is rare in Nigeria but cannot be ruled out. The maintenance of electrical installation is the poor and illegal construction of buildings such as football viewing centers, stores and an even residential apartment under high tension cables is a common occurrence. These buildings are usually marked for demolition but the occupants are adamant. We report a case of seven persons ranging in age from 13 to 65 years and comprising of a female and six male with a ratio of 1:6; who sustained various degrees of electrical burns to their upper, lower limbs, trunk resulting in death. The cause of death was sudden and determine by autopsy to be ventricular arrhythmias.

Keywords: Electrocution, Football viewing Centre and Autopsy.

Introduction

Electrocution results when a person is exposed to a lethal amount of electricity¹. Homicidal electrocution is caused by placing the live wire in some place which the victim is expected to touch or come into contact with ². Deaths due to electrocution are usually accidental in nature, with suicides being rare and homicides even rarer. Most of the death from electrocution are preventable in nature and they can be prevented by implementing proper

educational programmes to the society including the electricity board workers with regard to the use of safety appliances and insulators ³. In South Africa, a very large proportion of electrical burns are probably due to cable-theft related injuries. There were 101 patients with electrical burns in the period studied, 37% were suspected or documented cable theft, 4% were from lightning, 10% were from domestic or informal injuries ⁴. In developing countries like India, the most fatalities due to

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electricity are accidental and due to lack of awareness, not operating as per standards and the use of cheap alternates available at low cost. In our society high tension, electrical injuries are uncommon and they usually occur accidentally and often occupational ⁵. In Uyo metropolis and Calabar municipality, Nigeria; Cases of children stepping on a detached naked high-tension electric cable hanging down from an electric pole with resultant loss of limbs and occasional death have been reported (6,7). Such avoidable accidents are due to poor maintenance culture and illegal connections by the consumer of electricity in Nigeria. We hereby report seven cases of high voltage electric fatalities that occurred in Calabar south-south, Nigeria in a soccer viewing center following high tension cable falling on the roof of the viewing center constructed by corrugated sheets with resultant mass casualty involving twenty persons out of which seven were confirmed dead at the spot and brought to our facility

Materials and Methods

This is an autopsy study of seven individuals comprising of six male and a

teenage female that were electrocuted in a poorly, unsupervised football Viewing centres constructed with corrugated sheets on which existed a high tension cable passing laterally on the roof that suddenly dislodged and fell on top of the roof killing seven persons in Calabar; south-south Nigeria. The seven were dead on arrival at the University of Calabar Teaching Hospital. No medical attention was given to them. A detailed autopsy was carried out on all the bodies and report written.

Results

A total of seven out of the 20 victims brought to the casualty department of the University of Calabar Teaching Hospital was confirmed dead on arrival. They include six male and a female with a ratio of 6:1. Their age range from 13 to 65 years. The victims sustained a various degree of injuries with entry points of the current located mainly at the lower limbs for three an of the cases and the right and left ha and for the remaining four cases. They existed wounds were mainly in the thoracolumbar region.



PLATE 1: Photomicrographs showing points of entry and exits of high voltage currents.

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PLATE 2: Photograph on the upper and lower left shows points of entry with crocodile appearance and the upper right shows burnt skin and subcutaneous tissues and the lower right above shows concentric ventricular hypertrophy with burnt papillary muscles.

Discussion

Sports especially football helps in relaxation and fostering unity among the people of Nigeria. The young, middle age and even some percentage of elderly are fans to one or more of European football clubs. They patronized viewing centers to watch their clubs play weekly. The challenges are that most of these viewing centers are illegally constructed, unsupervised and some located under high tension cables or closed to transformer installation like in our case. The materials used in the construction of most of such viewing centers are corrugated iron sheets and some used metal shipping containers. The viewing center in question was constructed with corrugated roofing sheets and located under a high tension cable. A cable suddenly detached and landed on the corrugated sheet being a good conductor used in the construction of the structures leading to severe injuries and death. The extent of injuries sustained depends however on the magnitude of the current (measured

in Amps), the pathway of the current, the duration of current flow and the resistance offered by the body with the amperage or the amount of current flow being the important factor in electrocution and also the human body been a part of an active electrical circuit for electrocution 8 . The victims suffered various degrees of skin burns to the upper, lower and thoracic regions (Plate 1). Some displayed the typical crocodile burns pattern and some showed single foci of entry on the left foot (Plate2). Guntheti et al showed that the characteristic feature of electrocution being electric contact mark over the body was not present in all as that is difficult for Forensic Pathologist to obtain electric mark by histopathological examination 9. Most of the deaths from electricity are from cardiac arrhythmias, usually ventricular fibrillation leading to cardiac arrest. It is due to the passage of current through the myocardium and possible dislocation of pacemaking nodes. Death may occur as a result of the respiratory arrest, due to paralysis of

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intercostals muscles and diaphragm or rarely by affecting the brain stem, when the current enters through the head (8, 9). Some of the victims had massive cardiomegaly with left ventricular hypertrophy which would have even made the prognosis worsen. The reported seven cases is considered accidental resulting from poor town planning and lack of government supervision of facility with the greed by an individual for profit making and lack of regard for human life. A study conducted by Kumar et al in a retrospective study conducted in India showed that out of 83 deaths, 71 investigated were accidental and the rest were suicidal. About 50 cases (60.7%) were dead at the scene of the accident and 33 cases (31.9%) were dead on arrival at the hospital 10. Shrigiriwar et al in a study of 86 cases with a history of electrocution found 97.67% of cases of accidental death and 2.32% cases of homicides. Accidental death was more common in the age group of 21 to 30 years 3. In a retrospective review of 126 electrocution-related deaths in Gauteng, South Africa; 91 cases represented low-voltage-electrocution deaths and 35 represented high-voltage electrocution deaths. The study illustrates the high number of electrocution-related fatality cases in the region as compared with the rest of the world¹².

Conclusion.

The Local government council town planning unit responsible for city development and Power holding companies responsible for installation and maintenance services of power lines cable needs to be more proactive to demolish illegal structures under power lines and operators of such illegal football viewing center educated on safety measures.

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