

H39 Electrothermal Fatalities

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Learning Overview: The goal of this presentation is to broaden insight and understanding of the relevant pathophysiology and pathology as well as the setting and manner of death associated with electrothermal fatalities.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by demonstrating how South Africa has an exceptionally high rate of electrothermal fatalities. These case studies serve to illustrate the spectrum of pathology, circumstance, and settings which may be relevant, with particular reference to manner of death such as homicide, accident, and suicide.

After attending this presentation, attendees will have a better understanding of electrothermal injuries and fatalities, more specifically in the setting of a developing country where there are relatively low levels of education, substandard housing, and lack of physical infrastructure. The very high incidence of fatal electrothermal injuries in a large metropolitan community will be demonstrated through a variety of case vignettes. Forensic pathologists and death investigators in particular should at all times be mindful of the possibility that such deaths may be of an accidental, suicidal, or homicidal nature.

Pretoria is the executive and administrative capital of South Africa, with a population of approximately three million people. A relatively large proportion of the inhabitants live in subeconomic housing units and informal settlements (including many so-called “squatter camps”), where illegal and uncertified electrical connections are prevalent. The Pretoria Forensic Pathology Service (medical examiner office) on average admits more than 2,000 non-natural fatalities for investigation annually, including a relatively large number of fatalities associated with exposure to electricity. The number of electrocutions in all forms has increased substantially over the past decade, but the reasons for this are not well studied or reported on, and the circumstances under which such fatalities occur are very divergent (including exposure to domestic current, high-voltage incidents, and lightning strikes).

This presentation aims to provide information regarding the various settings which are associated with electrocutions in this region, also providing an overview of the pattern(s) of injury as well as the morphology of the typical—and indeed almost unique—injuries often associated with such events. The presentation will in particular attempt to demonstrate that the admissions to the Pretoria Forensic Pathology Service represent widely divergent circumstances and that the attending pathologist and/or death investigator should be very attentive and informed in this regard, as eventual determination of the probable mechanism as well as manner of death may greatly depend on autopsy and scene findings. The case presentations will include cases of accidental manner of death (including mother and child electrocution), self-inflicted/suicidal exposure to domestic current, fatal high-voltage electrocution during attempted theft of pylon cables, and electrocution of a victim during a rape attack. Graphic images of the scene where such incidents occurred as well as the relevant autopsy findings will be shared, in conjunction with a discussion of the basic physical parameters associated with such electrocutions. In addition, a brief discussion of the classification of manner of death relevant to these cases will be presented.

Electrocution, Electrothermal Injuries, Manner of Death