

CASE REPORT

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Attempted homicide by electrocution

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Abstract Attempted homicide by the application of a high-voltage, low-amperage current is reported in an elderly male. An electrician constructed an apparatus and applied the current to wet towels placed on the abdomen of the victim sleeping next door. The attempt was unsuccessful and resulted in burns only. The victim was hospitalised and died 3 weeks later. A causal connection could not be established between the attempted electrocution and the demise of the victim.

Key words Electric injury · Homicide · Electrocution

Introduction

Fatalities from electric injury occur in suicide attempts (e.g. Lawrence et al. 1985; Bonte et al. 1986; Fernando and Liyanage 1990), accidentally in electricians (e.g. Chandrasiri 1988; Mogthader et al. 1993) and in autoerotic experimentation (e.g. Weimann 1960). Homicidal electrocution is very rare and only very few such reports have been published (Höpler 1931; Svensson and Wendel 1955; Schwerd and Lautenbach 1960; Schneider 1973; al-Alousi 1990). A case of attempted homicide is reported where the perpetrator was unsuccessful despite extensive preparations made by him because of the type of current, the site and the method of application.

Case report

An electrician made an attempt to kill his 87-year-old neighbour for financial motives. He constructed an apparatus consisting of 5 transformers connected in series (Fig. 1a) and an additional transformer inserted between the mains electrical supply (220 V) to protect the fuse (Fig. 1b). Two long cables with attached "crocodile" clips were connected to this construction which could generate high voltages of up to 2300V. The electrician placed wet tow-

els on the abdomen of the victim while he was sleeping, connected the clips to the towels (Fig. 1c) and then turned on the current. The old man started to scream immediately this took place, whereupon the perpetrator stopped the application of the current and was seen by neighbours escaping from the apartment of the victim. An ECG taken from the victim then showed no differences when compared to another ECG taken 3 weeks before. Blood investigations gave normal results, particularly relevant enzymes like CK (creatine phosphokinase), LDH (lactate dehydrogenase) and HBDM (hydroxybutyrate dehydrogenase). Burns were located on the skin of the upper abdomen and several small burns were present on the fingers of both hands. The pyjamas and the duvet were burned at sites corresponding to the abdominal burns. The patient was transferred to a nursing home where he died 3 weeks after the incident.

At autopsy the burns were scabbed over and healing (Fig. 2 a, b). Pathology findings included massive generalised arteriosclerosis, subtotal stenosis of the left coronary artery and two old myocardial infarction scars in the left ventricle. The cause of death was severe bilateral bronchopneumonia in both lungs associated with pre-existing chronic obstructive airways disease and emphysema.

Discussion

The noxious effects of exposure to electricity depend on several factors including the nature (alternating vs direct current), voltage, frequency, amperage and the pathway of flow of the current applied, the skin's resistance and the duration of contact. Death is due mostly to either ventricular fibrillation or asphyxia caused by tetanic contraction of the breathing muscles (Polson and Gee 1984; Solem et al. 1977; Tedeschi et al. 1977; Wilkinson and Wood 1978; Arya et al. 1996). In the case reviewed here, the construction of the electrical circuit was able to produce an alternating current with high voltages up to 2300 V but with only low strengths of currents in the range of milli-amperes and due to the unexpected screams of the victim at the time of contact duration of the electrical contact and exposure to the current were short. Furthermore, due to the site of application, the current could not flow through the heart and could not result in a fatal outcome. The perpetrator had been unsuccessful because of a miscalculation and a less sophisticated technical interphase would probably have been more effective and without producing

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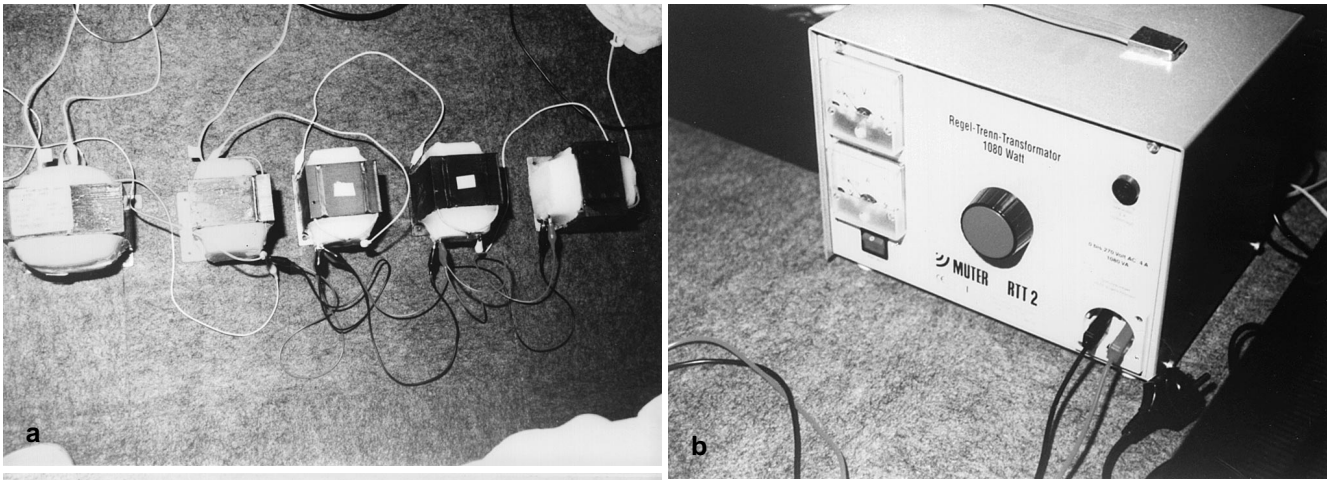


Fig. 1a-c Constructed apparatus consisting of 5 transformers connected in series, an additional transformer for the protection of the fuse and cables with "crocodile" clips connected to towels

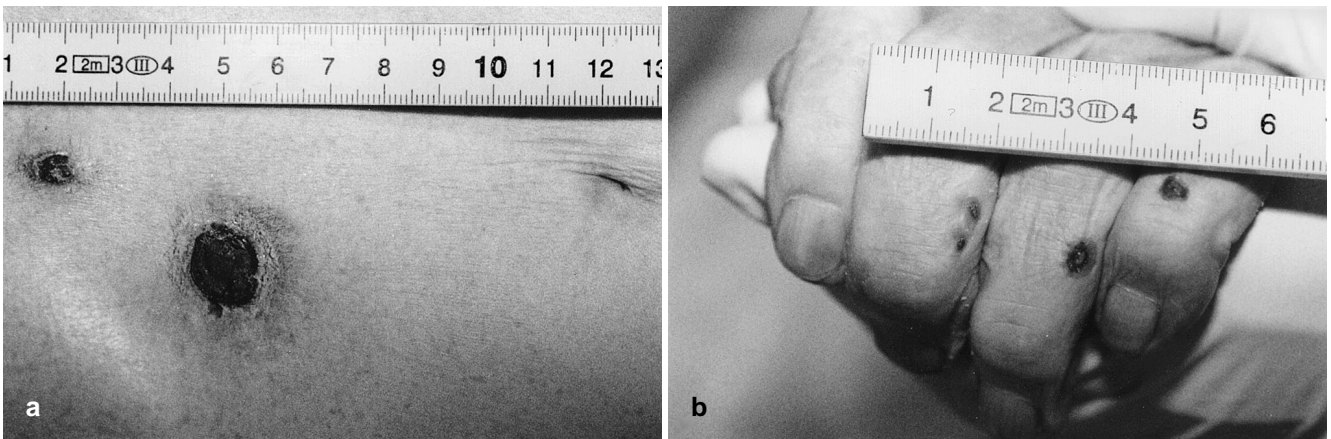


Fig. 2a, b Burn wounds (current marks) located on the upper abdomen of the victim and on the fingers (pictures taken at autopsy)

burn injuries. The small burns on the fingers of the victim can be explained by the generation of sparks during his attempts to remove the applied construction, indeed from the surface of one of the clips and a cable connected with the towel, DNA compatible with that of the victim could be isolated.

Myocardial lesions can be caused by electric injury and are demonstrable by histochemical and immunohisto-

chemical methods (Brinkmann et al. 1993) but in our case these investigations yielded negative results. Deaths from electrocution delayed for several days after the electricity exposure are rare (Sigmund et al. 1991). No sufficient evidence could be gathered in this instance to establish a direct causal link with the attempted electrocution and the perpetrator was therefore accused of attempted homicide.

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