

# Electric Burns Injuries of Head and Neck Region: A Retrospective Study

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## Abstract

**Introduction:** Electric burn patients are increasing every day with increasing use of importance of electricity. This is more common in semi-urban and rural areas where the people are less aware regarding the safety of electrical burns in contrast to develop countries.

**Aim & Objectives:** To assess the incidence of electric burn injuries in head and neck area and enforce strict laws and create public awareness to prevent the same.

**Materials and Methods:** A retrospective analysis was done in our Department of General Surgery from March 2010 to March 2013 with 113 patients affected with burns. Out of them, 89 patients had electric burns with rest of them being chemical, thermal and other burns. Out of 89 patients, 51 patients had electric burns of head and neck region that were included in the study.

**Results:** Electric burns injuries involving head and neck region was seen in 61.4% of total victims. The most common age group was 20-40 yrs. Incidence was higher in rural population with 81.9% compared to urban 28.1%. Electricians, workers in electricity board comprised 59.26% of victims. In all patients, debridement was done and collagen membrane was grafted and some patients required reconstructive procedures 35.2% of patients.

**Conclusion:** Electric burns are not uncommon in rural areas of India. The incidence electric burn injuries can be decreased if there is a public awareness especially among the electric workers regarding hazards of high voltage tension lines explained and use of safety equipments made mandatory.

**Keywords:** Electric burns, Head and neck, Safety measures

## INTRODUCTION

Electricity forms the main modality of support to every one's life. In the modern times the use of electricity has increased many times and so has the incidence of high/low voltage electrical burn injuries. The incidence of high/low voltage electrical injuries are much higher in rural, semi-urban areas of developing countries. Literature says that about 0.8-1.0% of accidental deaths happen due to electricity burns and constitute around 6-9% of all burns patients. Electrical injuries cause around 1000 deaths in States each year with a mortality rate of 3-15%.<sup>1-3</sup>

## MATERIAL & METHODS

This retrospective study was conducted in Department of General Surgery in Teerthankar Mahaveer Medical College & Hospital, Moradabad from March 2010 to march 2013 with 113 patients affected with burns. Out of them 51 patients had electric burns of head and neck region with rest of them being chemical, thermal and other burns. Only electric burn patients were included in this study.

As soon as the patient arrived in department of emergency, patients were hemo-dynamically stabilised for their vitals

using strict ATLS protocols. Medical history and clinical examination of the patients were carried out. Fluid replacement was titrated to maintain urine output of 0.5-1.0 ml/kg/hr and complete surgical profile was taken to rule out myoglobinuria. Patients with only electric burn injuries of head and neck were included in this study. A complete personal history regarding occupation, cause of electrical burn injury, site and duration of contact, voltage of the of electric current (voltage) was taken. Routine investigations like electrocardiogram, arterial blood gas, chest x-ray and renal function test were performed in every patient.

## RESULTS

Out of total 113 patients (Table 1) of burn injuries, 51 patients had involvement of head and neck region (Table 2). Males were more commonly affected 42 males against 9 females. Incidence of injuries were higher in rural areas with 81.9% as compared to urban with 28.1% (Table 3). The patients in this study had the age range from 20 years to 40 years.

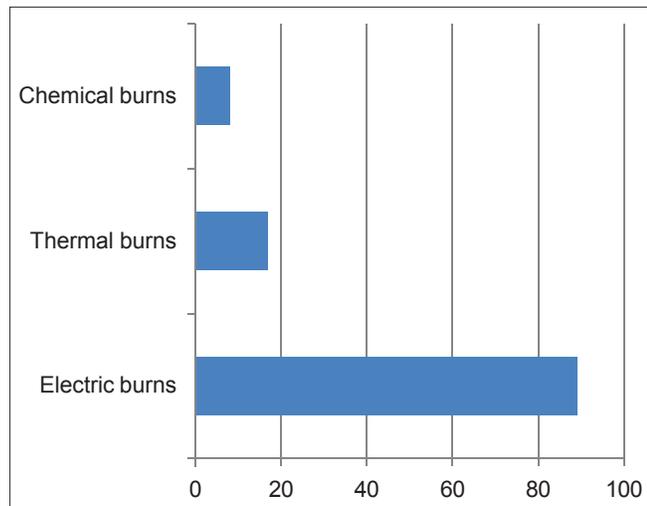


Table 1: Total patients affected with burns

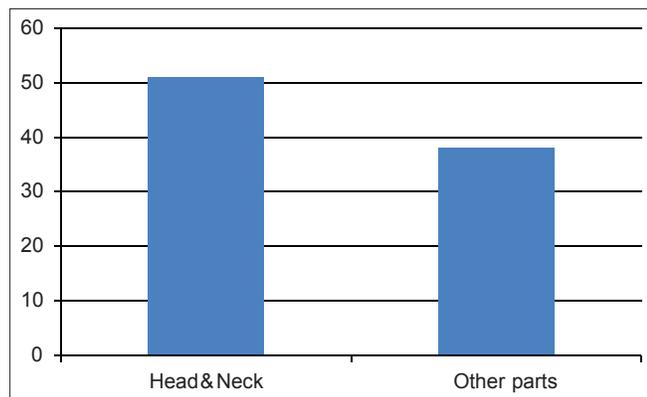


Table 2: Distribution of electric burn injuries

Most of the patients were associated with electric department workers with 65.3%, house hold workers 23.5%, and others indirectly associated with electricity jobs were 11.2% (Table 4). Electric burn injuries of head and neck were comprising of 61.4% when compared to other parts. 64.8% of patients underwent debridement of the wound injuries, collagen grafting procedures. 35.2% of patients required skin grafting. We did not find any major complications in our study.

## DISCUSSION

Electric burn injuries of head and neck were more common in males occurring in age group of 20 to 40 years, This might be due to the occupational hazards are most common associated with them as they are the earning group of the family.<sup>4,7</sup> The young adults were associated with electric burns of head and neck due to their aggressiveness of performing activities and their carelessness and risk taking behavior. Most of the electric

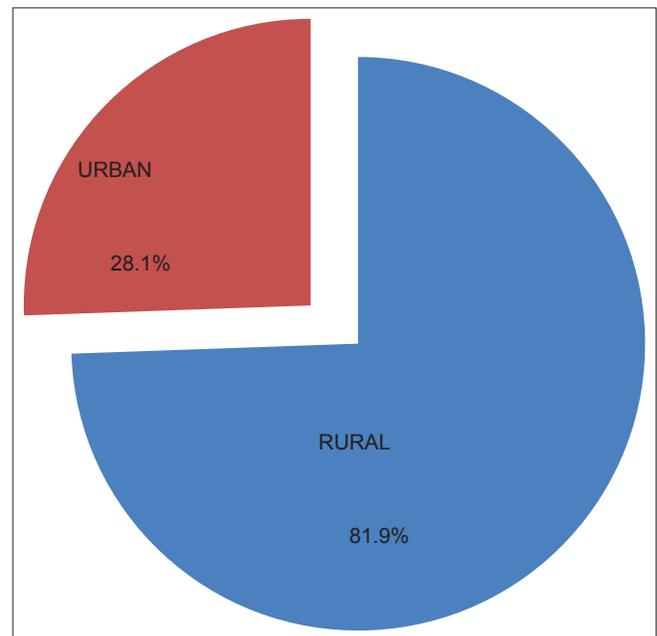


Table 3: Areas of distribution

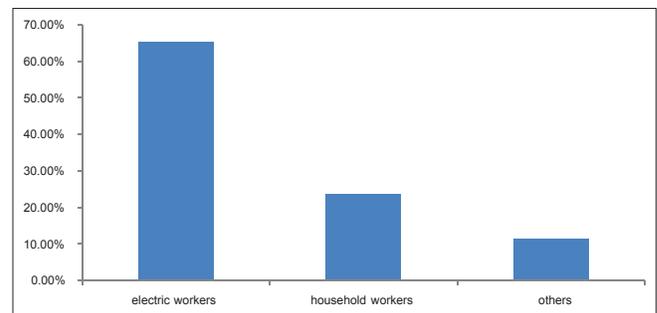


Table 4: Occupation based injuries

workers were young adults and improper instructions for the precautions.

Electric burns of head and neck region comprised of 61.4% of high/low voltage injuries and is quite high than other parts of the world.<sup>8-10</sup> The main reason may be less or no public awareness about the precautions in rural and semi urban population for using helmets, electric gloves and risk of touching live wires. It was also due to lack of proper insulated transmission lines and lack of enforcement of strict rules among the population.<sup>11-14</sup> The electric burn injuries are more in winter months when these non insulated wires are exposed outside.

Among occupation, electrical department workers were the most commonly affected and the reason was lack of proper training and non enforcement of strict laws for prevention of electric burns. Hence use of electric gloves, helmets, rubber boots were used to prevent the injuries. Head and neck injuries might be more common due to the first exposed area of the body for the injuries. 64.8% of patients underwent debridement of the wound injuries, collagen grafting procedures. 35.2% of patients required skin grafting. There were no major complications found in this study.

We conclude that electric burn injuries of head and neck are most common in rural and semi-urban areas of population. This can be prevented by enforcement of strict laws and training for all the electric department workers and also creating mass media public awareness among the general

public. All the tension lines must be insulated in rural and semi-urban areas to prevent the chances of electric burn injuries.

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