A case of an electrical burn in the oral cavity of an adult

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Abstract: Electrical burns in the oral cavity account for 2.2% of all electrical burns and only 0.12% of all burns; thus, the incidence of electrical burns in the oral cavity is relatively low. As this type of injury occurs in the oral cavity when an individual sucks or chews on a live electrical wire, extension cord, plug, or outlet, most cases occur in toddlers or preschool children, and adult cases are extremely rare. Here we describe a case of an electrical burn in a 56-year-old man who accidentally bit the electric wire of a cleaner while carrying out repairs. Conservative treatment, without surgery, was performed. Two years after the injury, a slight scar and a small tongue deformity remain, but no functional disturbance has been observed. (J. Oral Sci. 41, 127-128, 1999)

Key words: electrical burns; adult; oral cavity.

Introduction

Most electrical injuries result from occupational accidents involving high voltage among electrical power linesmen and electricians, and management of these injuries is generally unknown by dentists. However, low-voltage electrical burns in the oral cavity are frequency caused by household electrical devices. In addition to local wounds, systemic complications of electrical burns including cardiac arrhythmias, ventricular fibrillation, respiratory distress caused by edema of the oral tissue, and delayed hemorrhage caused by weakening of blood vessel walls have been reported (1). Therefore, patients with electrical burns need to undergo a thorough systemic evaluation on initial presentation.

As injury of the oral cavity results when an individual sucks or chews on a live electrical wire, extension cord, plug, or outlet, most cases occur in toddlers or preschool children (2), and adult cases are extremely rare.

We recently encountered a case of an electrical burn in a 56-year-old man who accidentally bit the electric wire of a cleaner while carrying out repairs. Here we present an outline of the case and briefly discuss the nature and characteristics of electrical burns and their management.

Case Report

A 56-year-old man visited our clinic in February 1996 complaining of an injury in the oral cavity. On the previous day, while repairing a vacuum cleaner cord at home, he had failed to notice that the cord was live, and bit the cord at the site of repair. The live cord had caused electrical burns in the oral region, but, there were no systemic abnormalities.

On general examination, there was no evidence that the patient had affective disorder or any other abnormal physiological condition (Fig. 1).

Oral examination revealed, a moderate defect in the mid-portion of the tongue and a slight defect in the anterior part of the palate and part of the upper and lower lips (Fig. 2). The patient was immediately admitted, and antibiotics were administered for 5 days to prevent infection. In addition, tube feeding through the nasal cavity was carried out. For the wound itself, Dextaltin® ointment was applied for 7 days. Conservative treatment, without surgery, was performed. One week later, the patient was able to ingest normal food, and was discharged -13 days- after injury. Recovery was uneventful, and at the 2-year follow-up examination, no functional disturbance was found except for a slight scar on the tongue (Fig. 3).

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Discussion

Electrical injuries represent approximately 5 per cent of all burns (3), and are frequently associated with multi-system involvement, resulting in significant morbidity or mortality.

Electrical burns have been divided into two types: arc and contact (1). The most common type occurring in the oral cavity is the arc, where saliva completes the circuit between the live wire and the tissues.

Thomas (4) reported that electrical burns of the oral cavity accounted for 2.2 % of all electrical burns and only 0.12% of all burns, indicating that the incidence of electrical burns in the oral cavity is relatively low.

Since most electrical burns are sustained as fatal occupational injuries among electrical power linesmen and electricians, most cases occur in men aged between 20 and 40 years (5). However, burns in the oral cavity often occur when a person sucks or chews on a live electrical wire, extension cord, plug, or outlet. Therefore, most of such burns are seen in small children, and are extremely rare in adults who have no affective disorder or handicaps; in fact no previous case has been reported in Japan.

For the management of electrical burns, if vital sign abnormalities are identified, the patient should initially undergo a complete physical examination. Regarding the treatment of the local wound itself, conservative (2,6) or surgical (1,4) management has been reported. Minor cases, in particular those affecting the oral commissure, are commonly treated by splint therapy to minimize postburn scarring and administration of antibiotics to prevent infection (6). Early surgical reconstruction can be considered for moderate and severe cases. However, the stage at which reconstructive procedures should be carried out and the method of reconstruction for severe cases are controversial. In our patient, a moderate burn injury of the tongue and slight burning on the palate and lips were seen. In severe cases affecting the tongue, adhesions can develop, resulting in ankyloglossia, which impairs speech. Except for those involving the oral commissure, however, most injuries to the oral cavity have no severe sequelae, and the present case was treated conservatively. Recovery was uneventful, and no serious functional disorders were observed during 2 years of follow-up.

Since instructional information about electrical devices and safety measures for prevention of electric shock are now widely available, the incidence of electrical burns resulting from occupational accidents has gradually decreased (4, 5). However, most household low-voltage electrical injuries are due to human error, and prevention is the best “treatment”. Close parental supervision of children, and greater care by adults, are important in order to prevent electrical burn injuries sustained through incorrect handling of electrical devices.

References


Fig. 3 After treatment, a slight scar remains in the mid-portion of the tongue. However, no functional disturbances have been detected.