ORIGINAL ARTICLE

ROLE OF TRACHEOSTOMY IN REDUCING MORTALITY FROM KALA PATHAR (PARAPHENYLENE DIAMINE) POISONING

Irfanullah Mahsud

Department of Medicine, DHQ Teaching Hospital, D.I.Khan, Pakistan

ABSTRACT

Background: Kala Pathar poisoning has become an important cause of morbidity and mortality in our community. Because of lack of an effective antidote in this poisoning, treatment is presently focused mainly on relief of symptoms. Oedema of the upper airway is an important presentation of this condition. The aim of this study was to know whether tracheostomy can improve the situation in this fatal emergency.

Material & Methods: Thirty-eight patients were studied over a period of about 2 years in a cross sectional study conducted in District Headquarter Teaching Hospital, Dera Ismail Khan. Relevant information, including symptoms signs and complications, were recorded and patients were divided into two groups depending upon whether they were subjected to tracheostomy or not.

Results: Out of 38 patients 36(94.74%) were female and 2(5.26%) were male. Twenty-seven (71.1%) were unmarried and the same number i.e. 27(71.1%) of patients was from low socioeconomic class. Majority of the patients 23(60.5%) were from rural areas and in 36(94.74%) the poisoning was suicidal. Out of 38 patients 29 underwent tracheostomy and 10(34.48%) died despite this procedure. In the remaining 9 patients without tracheostomy 5(55.55%) patients died.

Conclusion: Oedema of the throat and larynx is an important cause of morbidity and mortality in Kala Pathar poisoning and tracheostomy is having statistically significant role in improving the outcome.

KEY WORDS: Paraphenylene diamine; Poisoning; Tracheostomy.

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INTRODUCTION

Suicide is responsible for one million deaths every year worldwide.[1] Various methods of suicide are used in different communities and socioeconomic classes. Many individuals intending to commit suicide resort to poisoning. As a result, poisoning is one of the major problems encountered in emergency departments of hospitals.[2] In the developed countries, an overdose of sedatives, hypnotics or narcotics is commonly used for this purpose so as to have a relatively painless death, whereas in developing countries agricultural pesticides are used.[3,4]

Poisoning with Paraphenylene diamine (PPD) is comparatively a new trend of suicide in various developing countries of Asia and Africa and is associated with high motility.[5,6]

Corresponding Author:
Dr. Irfanullah Mahsud
DHQ Teaching Hospital
D.I. Khan, Pakistan
E-mail: razmian1999@icloud.com

PPD poisoning is emerging an important cause of death in India.[7] It was the number one cause of poisoning in Morocco in 1990.[8] PPD is a component of hair dyes and is easily available.[9] It is traditionally used for dyeing palms and soles along with henna and to dye the hairs. PPD accelerates the dyeing process. Ingestion of PPD causes rapid development of oedema of the face, neck, pharynx, tongue and larynx initially and then rhabdomyolysis.[10] Finally acute renal failure results from renal tubular necrosis due to deposits of the toxic metabolites of PPD.[11] PPD is found in almost all brands of commercially available hair dyes.[10] PPD is active ingredient of Kala Pathar (Meaning Black Stone in Urdu).[12] The compound PPD is highly toxic when taken orally.[12]

Despite the high frequency of cases and mortality, no antidote is available for this poisoning and the patients are given supportive treatment including tracheostomy.[13] The aim of this study was to know about the outcome of patients treated with tracheostomy versus those not subjected to this procedure.

MATERIAL AND METHODS

The study was conducted in Medical unit of District Headquarter Teaching Hospital, Dera Ismail Khan, Pakistan and its attached emergency department. The study extended over a period of about 2 years starting from September 2013. The study was started with 41 patients. Two cases were referred to other centers and one was last to follow-up. These three cases were excluded from the study and the remaining 38 patients with alleged Kala Pathar poisoning were taken up for study.

After getting consent of the patient/attendant and approval from local ethical committee, proper history was taken, examination and relevant investigations advised in each and every patient. Treatment was given in the form of oxygen inhalation, Intravenous fluids, antihistamines, steroids and antibiotics. Daily progress was recorded and investigations were repeated as and when needed. Patients with acute renal failure were treated accordingly and patients with airway obstruction leading to respiratory distress were treated with tracheostomy after getting informed consent. The outcome in tracheostomy treated group was compared with no tracheostomy group. Out of 38 patients 29 patients were treated with tracheostomy and the remaining 9 patients were treated conservatively.

RESULTS

Out of 38 patients with Kala Pathar poisoning 2 (5.26%) were males and 36 (94.74%) females. The age range of patients was from 15-45 years with a mean age of 22.08±6.42 years. Among these 27 (71.1%) patients were unmarried while 11 (28.9%) were married. Regarding socioeconomic status 27 (71.1%) were of low class, 11 (28.9%) middle class and no patient was from high socioeconomic class. Fifteen (39.5%) were from urban while 23 (60.5%) from rural areas.

Suicidal intention was the reason for poisoning in 36 (94.74%) patients and accidental poisoning accounted for 2 (5.26%) patients. Out of the various complications, laryngeal oedema occurred in 35 (92.1%) patients. Out of these 35 patients 29 patients were treated with tracheostomy whereas in the remaining 6 patients it was avoided either because of lack of consent or because of other comorbidities.

Ten out of 29 patients died in the tracheostomy treated group giving a mortality of 33.48%. In the group not treated with tracheostomy 5 died out of 9 patients giving a mortality of 55.55%. By applying chi square test, it was found that the number of deaths in tracheostomy group was significantly lower as compared to those without tracheostomy ($p<0.05$).

DISCUSSION

Our study has shown that young females are the sole victims of this poisoning. This is in accordance with the experience by Muhammad Aftab Akbar et al6 and Chrispal et al.[14] Although the overall mortality in our patients was high 39.45% in contrast to 20% mortality given by Akbar et al[6] but the total number of patients in their study was very low i.e. only five.

Various studies have shown that cervicofacial oedema is usually the first clinical manifestation which most of the time occurs within 6 hours of ingestion. This time period is crucial to reach appropriate health care facility. Asphyxia and respiratory failure are the main threats to life. The time to reach the hospital in our study ranged from one hour to 24 hours with a mean of 4.68±5.31 hours. This delayed onset of treatment may be another factor responsible for high mortality in our study despite tracheostomy. The life-saving role of tracheostomy has been cited in other studies as well.[15]

CONCLUSION

Kala Pathar (Paraphenylene diamine) poisoning is an important cause of death mainly by causing asphyxia and respiratory failure. Young females of low socioeconomic class are the main victims of this poisoning. Mortality from this condition can be reduced by public awareness, earlier initiation of appropriate supportive therapy as the 1st six hours are more important in deciding the outcome.

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CONFLICT OF INTEREST
Authors declare no conflict of interest.
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None declared.