

Kala Pathar (Paraphenylene Diamine) Poisoning; Role of Tracheostomy: Our Experience at DHQ Hospitals

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ABSTRACT

Aim: To evaluate the presentation, outcome and role of tracheostomy in the management of kala pathar (Paraphenylene diamine) poisoning.

Methods: All the patients presented in the emergency department with kala pathar (Paraphenylenediamine) poisoning were included.

Results: A total of 88 cases with paraphenylenediamine (PPD) poisoning admitted to ICU. The majority of cases were young females from lower socioeconomic background with intentional suicidal attempts. Ascervicofascial swelling and angioneurotic oedema of upper aerodigestive tract being the prominent feature, emergency tracheostomy with assisted ventilation were performed in every patient. A high mortality rate was observed.

Conclusions: Kala pathar (Paraphenylenediamine) is an extremely toxic agent when ingested with high morbidity and mortality. Tracheostomy should be performed immediately as airway is the major concern.

Keywords: Kala pathar. Paraphenylenediamine (PPD). Tracheostomy.

INTRODUCTION

The suicide is an emerging social stigma. The incidence of suicide is increasing every year¹. Self poisoning is the most common way for this purpose with a very high mortality in developing countries including Pakistan². Paraphenylenediamine (PPD), commonly known in Pakistan as Kala Pathar, is a frequently used chemical as a suicidal agent along with pesticides^{3,4,5}. It is a white solid organic compound turns to black on exposure to air⁶. PPD is very lethal when taken orally⁷. PPD along with H₂O₂ and ammonia is used in hair dyes in henna (MEHNDI)^{8,9}. It can be ingested accidentally or intentionally for self-harming or homicidal⁸. Although highly fatal, this chemical, unfortunately readily available in our country^{7,9}. Main presenting complaints after ingestion of PPD are swelling of whole of the aerodigestive tract along with angioneurotic oedema, renal failure and rhabdomyolysis^{10,11}. Because of angioneurotic oedema, it may prove highly fatal within 6-24 hours^{12,13}. It is very lethal substance and even 7-10 gram can cause death^{11,13}. Treatment is only conservative as there is no antidote for it¹⁴. As cervicofascial swelling is the main early presentation after ingestion of PPD, securing of the airway is the most important part of the management and tracheostomy is the first choice for this purpose. The purpose of this study is to evaluate the role of tracheostomy in the management of PPD poisoning at DHQ hospitals.

METHOD

This study carried out at DHQ Hospital Sahiwal and DHQ Hospital Gujranwala. All the patients who presented with PPD poisoning to the emergency departments of these hospitals for treatment and management in last six months. Patients with other poisoning were excluded. Data calculated included age, gender, socioeconomic status,

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mode of poisoning (suicidal, accidental, homicidal), tracheostomy and mortality. Regarding age patients grouped in two categories i.e. less than 14 years of age and above. Regarding education three groups; illiterate, from primary to matric and above. Socioeconomically in three groups; low with income less than 20000 and upper with income more than 50000 and in between as middle class.

RESULT

In this study, 88 cases of PPD poisoning were assessed. Out of 88 patients with PPD poisoning 69 (78.40%) were female and 19 (21.59%) were males. Regarding age distribution 7 (7.95%) were less than age of 14 while 81 (92.04%) were above that age. In age group of less than 14 years (Group A), 5 patients were males out of 7 and in group older than 14 years (Group B), total 73 (19.12%) were females. In age group (A) all the cases were of accidental ingestion while in group (B) 72 were of suicidal attempt, 5 were of accidental and 4 were of homicidal case. 70 were from lower socioeconomic group 16 were from middle and 2 from upper class. 64 were in illiterate group,

18 were in group from primary to matric and 6 were in above matric group. PPD poisoning proved fatal in 26 (29.54%) patients and out of these, 15 were of in age group (A). In 7 patient it the death occurred within 48 hours of presentation. Tracheostomy was done in all of the 88 patients to prevent dyspnea and suffocation.

Table-1: Sex distribution

Gender	No of case	%age
Male	19	21.59
Female	69	78.40

Table-2: Age distribution

Age	No of case	Male	Female
Less than 14 years (Group A)	7 (7.95%)	5 (71.42%)	2 (28.57%)
More than 14	81 (92.04%)	8 (9.87%)	73 (90.12%)

years (Group B)			
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Table-3: Mode of ingestion

	n	Accidental	Suicidal	Homocidal
Less than 14 years (Group A)				
Male	5	4	0	0
Female	2	2	0	0
More than 14 years (Group B)				
Male	8	4	1	3
Female	73	10	63	0

Table-4: Socioeconomic group

Socioeconomic status	No of case	Percentage
Upper	02	2.27 %
Middle	16	18.18 %
Lower	70	79.54 %

Table-5: Education status

Education	No of case	Percentage
Illiterate	64	72.72 %
Primary to matric	18	20.45 %
Above matric	06	6.81 %

DISCUSSION

Poisoning with Paraphenylenediamine (PPD), commonly known as kala pathar is becoming a prominent apparent cause for committing suicide in developing countries like Pakistan¹⁵. This is because of its low cost, easy access. Because of its salty taste it can be mixed with food items for homicidal intention.

In our study majority of the cases were adult females. This is in accordance with the studies like of Akber MH⁷ and Anugrah Chrispal⁵. Other studies also show the same findings^{14,15,17}. Social conflicts due to gender inequalities and easily availability as hair dye could explain this female preponderance. In lower age group males are more prone and most cases are due to accidental ingestion. In our study all cases below age of 14 were of accidental ingestion with male preponderance. This is probably because young male children are more prone to unsupervised roaming and eating.

Most of the cases in our study were from lower socioeconomic (79.54%) and less educated, almost illiterate (72.72%) background. This relationship among low socioeconomic status, less education and PPD poisoning also shown in other studies^{14,15}.

As most death with PPD poisoning occur within four to six hours, this initial period of 4-6 hours after PPD poisoning is very crucial to reach appropriate emergency dealing health facility. Oedema of cervicofascial region is usually the first symptoms to occur^{5,18}. Respiratory distress is the main cause of death so maintain the airway crucial. In this case tracheostomy is the key procedure for maintain a patent airway as endotracheal intubation is difficult in this situation. In our study tracheostomy was done in all cases.

The mortality was (29.54%) in our study and similar to that presented by other studies^{7,13,14,19}. This high mortality mainly was due to the late arrival to a health facility and late tracheostomy.

CONCLUSION

Paraphenylenediamine (PPD), commonly known as kala pathar is emerging as an new chemical agent for suicidal

purpose because of its easy availability. A very large number of PPD poisoning cases present to the hospitals in Pakistan every month. There is no antidote for this poison so early arrival with immediate recognition and management could be lifesaving. As the respiratory distress is the major feature of this poisoning, tracheostomy should be done as early as possible.

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