

ORIGINAL ARTICLE

Evaluation of Clinical Spectrum of Kala Pathar Poisoning at Jinnah Hospital LahoreALI REHAN¹, SIDRA SONIA CHAUDHRY², IMRAN AHMED MOINUDDIN³, NAVEED NAYYER⁴¹Medical Specialist, Jinnah Hospital Lahore²Consultant Pathologist, Punjab Institute of Mental Health, Lahore³Assistant Professor of Medicine, University College of Medicine and Dentistry Lahore.⁴Assistant Professor of Medicine, Bahawal Victoria Hospital, BahawalpurCorrespondence to: Dr. Ali Rehan, Email: Medalirehan@gmail.com, Cell: 03333229942**ABSTRACT****Objectives:** To study the frequency of different clinical presentations of kala pathar poisoning at Jinnah Hospital Lahore.**Study design:** Cross sectional study**Place and Duration:** Department of Medicine, Jinnah Hospital, Lahore from April 2021 to October 2021.**Methodology:** A total of 90 patients with h/o kala pathar poisoning of both sex and of age 20-50 year were included. Case sheet of patients were prepared for age & sex and clinical presentation i.e. pain in throat, dysphagia, dysphonia, cervico-facial edema, difficulty in opening mouth, dark urine, acute renal failure, sinus tachycardia and sinus bradycardia.**Results:** Mean age was 33.69 ± 7.91 years. Out of 90 patients, 54 (60.0%) were males and 36 (40.0%) were females with male to female ratio of 1.5:1. Mean duration of kala pathar intake was 7.33 ± 5.86 hours. The main presentation of kala pathar poisoning was pain in throat (98.89%), dysphagia (100%), dysphonia (100%), cervico-facial edema (97.78%), difficulty in opening mouth (98.89%), dark urine (86.67%), acute renal failure (44.44%), sinus tachycardia (88.89%) and sinus bradycardia (21.11%).**Conclusion:** This study concluded that pain in throat, dysphagia and dysphonia are the common clinical presentations of kala pathar poisoning followed by cervico-facial edema, difficulty in opening mouth, dark urine, acute renal failure, sinus tachycardia and sinus bradycardia.**Keywords:** Kala pathar poisoning, dysphagia, dysphonia, angioedema, sinus tachycardia.**INTRODUCTION**

About 600000 deaths in the developing countries in the 1990s were caused by suicide.¹ For people aged 15 to 44, it is the third most common cause of mortality. Suicide rates have reached 60% during the past 50 years.² Poisoning is the chosen method of suicide. The most frequent kind of poisoning in underdeveloped nations is cutaneous or ingested pesticides. In many developing nations in Africa and Asia, poisoning with paraphenylenediamine (PPD) is becoming a common method of willful self-harm.³

Its chemical formula is C₆H₄(NH₂)₂, and it is known as kala pathar p-Phenylenediamine (PPD). Although samples of this aniline derivative can get darker due to air oxidation, it is a white solid.⁴ Engineering polymers and composites are the principal applications for it. Additionally, it is a component of hair dyes.⁵ In many developing nations in Asia and Africa, poisoning with paraphenylenediamine (PPD) is becoming a common way for people to intentionally hurt themselves.⁶ The first case of systemic PPD poisoning was reported in 1924 and included a hairdresser who became toxic after handling the dye.⁷ Since then, there have been several reports, mostly from underdeveloped nations.

Acute renal failure, hepatic necrosis, rhabdomyolysis, intravascular hemolysis, and angioedema with dysphasia and respiratory distress are important clinical symptoms.⁸ A deadly arrhythmia or myocarditis could also result from PPD overdose. Early planning is a management tenet.

The goal of our study was to determine what kind of kala pathar poisoning would manifest clinically in our cohort most frequently. Kala pathar poisoning is widespread in our population as well, and in order to save the patient's life, it is important to correctly treat each of its various clinical manifestations. The results of this study's statistics will aid doctors in understanding the typical clinical manifestations of kala pathar poisoning, which will help them create a protocol for the disease's effective therapy and decrease mortality.

OPERATIONAL DEFINITIONS:

- **Kala pathar poisoning:** all patients with h/o kala pathar intake.
- **Pain in throat:** was assessed on history.
- **Dysphagia:** difficulty in swallowing (assessed on history and clinical examination).

- **Dysphonia:** an inability to produce voice sounds (assessed clinically).
- **Cervico-facial edema:** facial swelling (assessed clinically).
- **Unable to open mouth:** assessed clinically.
- **Dark urine:** cola colored urine in the foley's catheter.
- **Acute renal failure:** s/creatinine >1.1 mg/dl and anuria (urine<50 ml/24 hours) was taken as positive.
- **Sinus tachycardia:** heart rate >100 beats/min.
- **Sinus bradycardia:** heart rate <60 beats/min.

MATERIAL AND METHODS

This cross sectional study was conducted at Department of Medicine, Jinnah Hospital, Lahore from April 2021 to October 2021. Total 90 patients with h/o kala pathar poisoning (as per-operational definition) of duration >1 hour, age 20-50 years of both genders were selected. Dead patients on presentation were excluded. Case sheet of patients were prepared for age & sex and clinical presentation i.e. pain in throat, dysphagia, dysphonia, cervico-facial edema, difficulty in opening mouth, dark urine, acute renal failure, sinus tachycardia and sinus bradycardia. All collected was noted on pre-designed proforma.

SPSS version 20.0 was used to analyze the data. Mean and SD was calculated for age and duration of kala pathar intake. The qualitative data like gender and clinical presentation i.e. pain in throat, dysphagia, dysphonia, cervico-facial edema, unable to open mouth, dark urine, acute renal failure, sinus tachycardia and sinus bradycardia were presented as frequency. Effect modifiers (gender, duration of intake and age) were controlled through stratification. P value ≤ 0.05 was considered as significant

RESULTS

Age range in this study was from 20 to 50 years with mean age of 33.69 ± 7.91 years. Mean duration of kala pathar intake was 7.33 ± 5.86 hours. The main presentation of kala pathar poisoning was pain in throat (98.89%), dysphagia (100%), dysphonia (100%), cervico-facial edema (97.78%), difficulty in opening mouth (98.89%), dark urine (86.67%), acute renal failure (44.44%), sinus tachycardia (88.89%) and sinus bradycardia (21.11%) (Table 1).

Two age groups 20-35 years and 36-50 years were created. Pain in throat was noted in 50 (98.04%) patients of age group 20-35 years while it was noted in 39 (100%) patients of age group 36-

50 years. Dysphagia was seen in 51 (100%) patients and 39 (100%) patients of age group 20-35 years and 36-50 years respectively. Cervico-facial edema was noted in 49 (96.08%) patients of age group 20-35 years and in 39 (100%) patients of age group 36-50 years. Difference was not significant ($P=0.211$). Total 51 (100%) patients of age group 20-35 years and 38 (97.44%) patients of age group 36-50 years were unable to open mouth. Difference was not significant ($P=0.250$). Dark urine was noted in 43 (84.31%) patients and 35 (89.74%) patients of age group 20-35 years and age group 36-50 years. Difference of dark urine was not significant ($P=0.453$). Acute renal failure was noted in 26 (50.98%) patients of age group 20-35 years and in 24 (61.54%) patients of age group 36-50 years. Difference was not significant ($P=0.318$). Sinus Tachycardia was noted in 45 (88.24%) patients and 35 (89.74%) patients of age group 20-35 years and age group 36-50 years respectively. Difference was not significant ($P=0.821$). Sinus Bradycardia was seen in 13 (25.49%) patients of age group 20-35 years while in 6 (15.38%) patients of age group 36-50 years. Difference was not significant ($P=0.244$). (Table 2) Out of 90 patients, 54 (60.0%) were males and 36 (40.0%) were females with male to female ratio of 1.5:1. Pain in throat was noted in 53 (98.15%) males while in 36 (100%) females. Difference was not significant ($P=0.412$). Dysphagia was found in 54 (100%) males and in 36 (100%) females. Dysphonia was seen in 54 (100%) males and in 36 (100%) females.

Table 1: Presentation of Kala Pathar poisoning

Presentation	Frequency (%)	
	Yes	No
Pain in throat	89 (98.89%)	01 (1.11%)
Dysphagia	90 (100.0%)	00 (0.0%)
Dysphonia	90 (100.0%)	00 (0.0%)
Cervico-facial edema	88 (97.78%)	02 (2.22%)
Unable to open mouth	89 (98.89%)	01 (1.11%)
Dark urine	78 (86.67%)	12 (13.33%)
Acute renal failure	40 (44.44%)	50 (55.56%)
Sinus Tachycardia	80 (88.89%)	10 (11.11%)
Sinus Bradycardia	19 (21.11%)	71 (78.89%)

Table 2: Stratification of Presentation with respect to age groups.

Presentation		20-35 years	36-50 years	P-value
		(n=51)	(n=39)	
Pain in throat	Yes	50 (98.04%)	39 (100.0%)	0.379
	No	01 (1.96%)	00 (0.0%)	
Dysphagia	Yes	51 (100.0%)	39 (100.0%)	----
	No	00 (0.0%)	00 (0.0%)	
Dysphonia	Yes	51 (100.0%)	39 (100.0%)	----
	No	00 (0.0%)	00 (0.0%)	
Cervico-facial edema	Yes	49 (96.08%)	39 (100.0%)	0.211
	No	02 (3.92%)	00 (0.0%)	
Unable to open mouth	Yes	51 (100.0%)	38 (97.44%)	0.250
	No	00 (0.0%)	01 (2.56%)	
Dark Urine	Yes	43 (84.31%)	35 (89.74%)	0.453
	No	08 (15.69%)	04 (10.26%)	
Acute Renal Failure	Yes	26 (50.98%)	24 (61.54%)	0.318
	No	25 (49.02%)	15 (38.46%)	
Sinus Tachycardia	Yes	45 (88.24%)	35 (89.74%)	0.821
	No	06 (11.76%)	04 (10.26%)	
Sinus Bradycardia	Yes	13 (25.49%)	06 (15.38%)	0.244
	No	38 (74.51%)	33 (84.62%)	

Cervico-facial edema was found in 53 (98.15%) males while in 35 (100%) females. Difference was not significant ($P=0.770$). Total 53 (98.15%) males and 36 (100%) females were unable to open mouth. Difference was not significant ($P=0.412$). Dark urine was noted in 45 (84.31%) males and in 33 (89.74%) females. Difference was not significant ($P=0.255$). Acute renal failure was noted in 36 (66.67%) males and in 24 (66.67%) females. Difference was not significant ($P=0.307$). Sinus Tachycardia was found in 45 (88.24%) males while in 32 (88.89%) females. Difference was not significant ($P=0.925$). Sinus Bradycardia was found in 12 (22.22%) males and in 7 (19.44%) females. Difference was not significant ($P=0.752$). (Table 3) Two groups 1-12 hours

group and >12 hours groups were created. In 1-12 hours group, pain in throat was noted in 67 (98.53%) patients while in it was noted in 22 (100%) patients of >12 hours group. Difference was not significant ($P=0.567$).

Table 3: Stratification of Presentation with respect to gender.

Presentation		Male	Female	P-value
		(n=54)	(n=36)	
Pain in throat	Yes	53 (98.15%)	36 (100.0%)	0.412
	No	01 (1.85%)	00 (0.0%)	
Dysphagia	Yes	54 (100.0%)	36 (100.0%)	----
	No	00 (0.0%)	00 (0.0%)	
Dysphonia	Yes	54 (100.0%)	36 (100.0%)	----
	No	00 (0.0%)	00 (0.0%)	
Cervico-facial edema	Yes	53 (98.15%)	35 (100.0%)	0.770
	No	01 (1.85%)	01 (0.0%)	
Unable to open mouth	Yes	53 (98.15%)	36 (100.0%)	0.412
	No	01 (1.85%)	00 (0.0%)	
Dark Urine	Yes	45 (84.31%)	33 (89.74%)	0.255
	No	09 (16.69%)	03 (10.26%)	
Acute Renal Failure	Yes	36 (66.67%)	24 (66.67%)	0.307
	No	28 (33.33%)	12 (33.33%)	
Sinus Tachycardia	Yes	45 (88.24%)	32 (88.89%)	0.925
	No	06 (11.76%)	04 (11.11%)	
Sinus Bradycardia	Yes	12 (22.22%)	07 (19.44%)	0.752
	No	42 (77.78%)	29 (80.56%)	

Table 4: Stratification of Presentation with respect to duration of disease

Presentation		1-12 hours	>12 hours	P-value
		(n=68)	(n=22)	
Pain in throat	Yes	67 (98.53%)	22 (100.0%)	0.567
	No	01 (1.47%)	00 (0.0%)	
Dysphagia	Yes	68 (100.0%)	22 (100.0%)	----
	No	00 (0.0%)	00 (0.0%)	
Dysphonia	Yes	68 (100.0%)	22 (100.0%)	----
	No	00 (0.0%)	00 (0.0%)	
Cervico-facial edema	Yes	66 (97.06%)	22 (100.0%)	0.416
	No	02 (2.94%)	00 (0.0%)	
Unable to open mouth	Yes	67 (98.53%)	22 (100.0%)	0.567
	No	01 (1.47%)	00 (0.0%)	
Dark Urine	Yes	60 (88.24%)	18 (81.82%)	0.442
	No	08 (11.76%)	04 (18.18%)	
Acute Renal Failure	Yes	37 (54.41%)	13 (59.09%)	0.701
	No	31 (45.59%)	09 (40.91%)	
Sinus Tachycardia	Yes	61 (89.71%)	19 (86.36%)	0.665
	No	07 (10.29%)	03 (13.64%)	
Sinus Bradycardia	Yes	14 (20.59%)	05 (22.73%)	0.831
	No	54 (79.41%)	17 (77.27%)	

DISCUSSION

We have conducted this study to determine the frequency of different clinical presentations of kala pathar poisoning at Department of Medicine, Jinnah Hospital, Lahore. Age range in this study was from 20 to 50 years with mean age of 33.69 ± 7.91 years. Majority of the patients i.e. 51 (56.67%) were between 20 to 35 years of age. Out of 90 patients, 54 (60.0%) were males and 36 (40.0%) were females with male to female ratio of 1.5:1. The main presentation of kala pathar poisoning was pain in throat (98.89%), dysphagia (100%), dysphonia (100%), cervico-facial edema (97.78%), difficulty in opening mouth (98.89%), dark urine (86.67%), acute renal failure (44.44%), sinus tachycardia (88.89%) and sinus bradycardia (21.11%).

Khuhro et al reported that there were 14(87.5%) patients were male and 2(12.5%) patients were female in their study and mean age of the patients was 25.87 ± 5.59 years. They found cervicofacial edema, pain in throat, oral erythema, dysphonia and dysphagia in all patients.⁹ In study of Qasim et al,¹⁰ total 109 patients of Kala Pathar poisoning were selected. Males were 11% while females were 89%. Age group 11-20 years was most common (50.45%). Pain and burning in oral cavity was also reported. Within 6-24 hours of oral intake, hypotension was developed. In study of Sakuntala et al¹¹ most of the patients with hair dye ingestion were females as compared to males (80.64% vs

18.75%). Most of the patients were between 21-30 years. Burning and pain in throat and mouth was reported by 96% patients followed by dysphagia and vomiting in 80% patients. About 58% patients had cola colour urine. Muscle pain was noted in all the patients and in 16% patients pedal oedema was developed. Among 38 patients, dysphagia was noted in 38 (100%), cervicofacial oedema in 36 (94.7%), dyspnoea in 36 (94.7%), haematuria in 8 (21.1%) and stridor in 7 (18.4%) cases. Rhabdomyolysis was observed in 22 (57.9%), acute renal failure in 15 (39.5%), and shock in 10 (26.3%) cases.¹² In study of Khan et al,¹² mean age of the patients with kala pathar poisoning was 22.08±6.42 years and male to female ratio was 1:8. Dysphagia was found in all (100%) patients followed by dyspnoea in 94.7% patients, cervicofacial oedema in 94.7% patients and haematuria in 21.1% patients.

On the whole, it is concluded that pain in throat, dysphagia and dysphonia are the common clinical presentations of kala pathar poisoning followed by cervico-facial edema, difficulty in opening mouth, dark urine, acute renal failure, sinus tachycardia and sinus bradycardia.

CONCLUSION

This study concluded that pain in throat, dysphagia and dysphonia are the common clinical presentations of kala pathar poisoning followed by cervico-facial edema, difficulty in opening mouth, dark urine, acute renal failure, sinus tachycardia and sinus bradycardia.

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