

## Renal Manifestation in Kaala Pathar (Paraphenylene Diamine) Poisoning

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### ABSTRACT

**Background:** Black stone or chemically known as Paraphenylenediamine is one of the major facilitators of suicide in women particularly. In the last year, 70 women in Punjab alone gave up their lives using black stone over financial troubles, domestic disputes and societal pressure. Black stone that is commonly used in hair dyes and henna is a strong coloring agent. Unfortunately, in the wake of the recently increased number of suicides black stone, commonly known as Kalaa Pathar, is regarded as the cheapest poison for suicide. But, what's even more concerning is that anyone can get this for only 10 rupees and is still being shamelessly sold in the market. Reportedly, three people are committing suicide every single day in the province of Punjab. The majority of the consumers are women belonging to lower or middle class.

**Aim:** To find out the renal manifestation (acute renal failure) of Kaala Pathar (Paraphenylene Diamine) Poisoning

**Methodology:** This descriptive, cross sectional study was conducted in the medical department of Ibae –Sienna Hospital Multan from January 2018 to August 2018. Sixty patients were included in the study that ingested kala pathar (PPD) by chance and to attempt suicide. The renal manifestation (acute renal failure) of kala pathar (PPD) was recorded on a specific proforma. All data was collected and analysed by using SPSS version 19 Software.

**Results:** Sixty patients were included in the study that ingested kala pathar (PPD) accidentally and to attempt suicide. Majority of patients have age between 15-20 years, ranging from 10-35 years of age. 40 patients (66 %) out of 60 were female and 20 patients (34%) out of 60 were found male. The renal manifestation of kala pathar (PPD) was observed as acute renal failure in 58 (97%) patients. Two patients (3%) out of 60 patients died due to shock, asphyxia and laryngeal spasm. 58 patients (97%) out of 60 went in to acute renal failure. 55 patients (95%) out of 58 patients having acute renal failure were completely recovered from acute renal failure after prompt medical intervention and 3 (5%) out of 58 patients were having residual renal damage. (Serum creatinine 2-4 mg/dl).

**Conclusion:** Significant Renal manifestation (acute renal failure) takes place in kala pathar (Paraphenylene Diamine) poisoning that can be prevented by using prompt medical intervention.

**Keywords:** Kala Pathar, Paraphenylene Diamine-PPD, Serum Creatinine

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### INTRODUCTION

PPD ingestion causes multiple organ dysfunctions. PPD is allergenic and tubulotoxic and causes angioneurotic edema and rhabdomyolysis, which lead to renal failure<sup>1,2</sup>.

Black stone or chemically known as Paraphenylenediamine is one of the major facilitators of suicide in women particularly. In the 2017 year, 70 women in Punjab alone gave up their lives using black stone over financial troubles, domestic disputes and societal pressure<sup>3,4,5</sup>. Black stone that is commonly used in hair dyes and henna is a strong coloring agent<sup>6</sup>. Unfortunately, in the wake of the recently increased number of suicides black stone, commonly known as Kalaa Pathar, is regarded as the cheapest poison for suicide<sup>7,8</sup>. But, what's even more concerning is that anyone can get this PPD at the cheapest price and is still being shamelessly sold in the market. Reportedly, three people are committing suicide every single day in the province of Punjab. The majority of the consumers are women belonging to lower or middle class<sup>9,10</sup>. However, no one knows that even though the chemical has been previously banned and the ban has been reimposed as well, but it is still being openly sold and is reachable to people of all ages including the younger lot. To overcome the problem, we need to act as a responsible

citizen and keep an eye if this life-threatening facilitator is being sold in our localities or not.

The objective of the study was to find out the renal manifestation (acute renal failure) of Kaala Pathar (Paraphenylene Diamine) Poisoning



## METHODOLOGY

This descriptive, cross sectional study was conducted in the medical department of Ibaae –Sienna Hospital Multan from January 2018 to August 2018. Sixty patients were included in the study that ingested kala pathar (PPD) by chance and to attempt suicide. The renal manifestation (acute renal failure) of kala pathar (PPD) was recorded on a specific proforma. All data was collected and analysed by using SPSS version 19 Software.

## RESULTS

Sixty patients were included in the study that ingested kala pathar (PPD) accidentally and to attempt suicide. Majority of patients have age between 15-20 years, ranging from 10-35 years of age. (Table 1)

Forty patients (66%) out of 60 were female and 20 patients (34%) out of 60 were found male. (Table 2)

The renal manifestation of kala pathar (PPD) was observed as acute renal failure in 58(97%) patients (Table 2)

Two patients (3%) out of 60 patients died due to shock, asphyxia and laryngeal spasm. 58 patients (97%) out of 60 went in to acute renal failure (Table 3).

55 patients (95%) out of 58 patients having acute renal failure were completely recovered from acute renal failure after prompt medical intervention and 3 (5%) out of 58 patients were having residual renal damage. (Serum creatinine 2-4 mg/dl) (Table 4)

**Age Information:** Majority of patients have age between 15-20 years, ranging from 10-35 years of age. (Table 1)

Table-1

**Sex Information:** 40 patients (66 %) out of 60 were female and 20 patients (34%) out of 60 were found male. (Table 2)

**Frequency distribution of patients having clinical manifestations due to ingestion of kala pathar (PPD):**

Two patients (3%) out of 60 patients died due to shock, asphyxia and laryngeal spasm. 58 patients (97%) out of 60 went in to acute renal failure. (Table 3)

**Frequency distribution of patients having renal manifestations due to ingestion of kala pathar (PPD):**

55 patients (95%) of 58 patients having acute renal failure were completely recovered from acute renal failure after prompt medical intervention and 3 (5%) out of 58 patients were having residual renal damage. (Serum creatinine 2-4 mg/dl) (Table 4)

Table 1: Frequency distribution of patients of according to age:

Age	Frequency	%age
10-15	12	20
15-20	30	50
20-25	10	16
25-30	6	10
30-35	2	4
Total	60	100

Table 2: Frequency distribution of patient according to sex

Sex	Frequency	%age
Male	20	34
Female	40	66
Total	100	100

Table 3:

Clinical manifestations	n
Died due to shock	2(3%)
Acute renal failure	58(87%)
Total	60(100%)

Table 4

Renal manifestations	n
Complete recover from Acute renal failure after prompt medical intervention	55(85%)
Residual renal damage (Serum creatinine 2-4mg/dl)	3(5%)
Total	58(100%)

## DISCUSSION

Most of kala pathar suicides took place in southern Punjab where Kala Pathar i.e. paraphenylenediamine can be purchased at cheapest cost. Every day, at least three people are drinking this poison to take their lives. [11,12]. Kala Pathar is locally used for hair dye. But it became the cause of death of 60 people, mostly women, within a period of 15 months[13]. Over the past few months, reported cases of suicide have risen concern. However, it still remains an unaddressed issue. Although, preventing reaching to this dangerous state needs effort on a personal level and also from friends and family but the authorities must take notice as to how suicide is being facilitated. MULTAN, At least 15,678 people mostly women have so far been died in Pakistan during the period of a year after taking the black stone (Kala Pathar) known by its chemical name of Paraphenylenediamine[14,15]. Deaths from poisoning through Kala Pathar are on the rise in South Punjab particularly in rural areas. Upper airway tracheostomy secondary to 'kaala pathar' ingestion is in fact becoming the new emerging indication for emergency tracheostomy. Rhabdomyolysis with chocolate colored urine and acute renal failure (ARF) could be a confirmative evidence of PPD poisoning even in the absence of laboratory facilities and when history is lacking in case of emergency [16,17]. Treatment of PPD is only supportive as there is no precise antidote of kala pathar

## CONCLUSION

Significant Renal manifestation (acute renal failure) takes place in kala pathar (Paraphenylene Diamine) poisoning that can be prevented by using prompt medical intervention.

## RECOMMENDATIONS

In the case of kala pathar availability in the market, it should be informed to the proper authorities for an effective barrier to its propagation. Apart from that, stake-holders interest also needs to be invested in raising awareness regarding the issue and to address the rising threat especially when there is witnessed back to back incidences of suicide in youth. In addition, medical personals especially nephrologists should be sensitized for management of this problem.

## REFERENCES

1. Ram R, Swarnalatha G, Prasad N, Dakshinamurthy KV (2007) Paraphenylenediamine ingestion: an uncommon cause of acute renal failure. *J Postgrad Med* 53: 181-182.
2. Akbar MA (2010) Kala pathar (paraphenylenediamine) intoxication; a study at Nishtar Hospital Multan.
3. Benslama A, Moutaouakkil S, Mjahed K, el Moknia M, Lahbil D, et al. (1998) [Intermediary syndrome in acute malathion poisoning]. *Presse Med* 27: 713-715.
4. SH Qadri, I Haq, E Haq, S Hassan (2014) An audit of the emergency tracheostomies in a tertiary care hospital. *JSZMC* 5:615-618.
5. Soni SS, Nagarik AP, Dinaker M, Adikey GK, Raman A (2009) Systemic toxicity of paraphenylenediamine. *Indian J Med Sci* 63: 164-166.
6. Sampathkumar K, Yesudas S (2009) Hair dye poisoning and the developing world. *J Emerg Trauma Shock* 2: 129-131.
7. Raheem MA, Hamdouk M, Zijlstra EE (2010) Paraphenylenediamine (Hair Dye) Poisoning in Children. *Arab Journal of Nephrology and Transplantation* 3:39-43.
8. Bokutz M, Nasir N, Mahmood F, Sajid S (2015) Hair dye poisoning and rhabdomyolysis. *J Pak Med Assoc* 65: 425-426.
9. Chandran J, Manners R, Agarwal I, Ebenezer K (2012) Hair dye poisoning in a paediatric patient. *Case Rep Pediatr* 2012: 931463.
10. Jain PK, Agarwal N, Kumar P, Sengar NS, Agarwal N, et al. (2011) Hair dye poisoning in bundelkhand region (Prospective analysis of hair dye poisoning cases presented in department of Medicine, Mlb medical college, Jhansi). *J Assoc Physicians of India* 59: 415-419.
11. Abdelraheem MB, Elbushra M, Ali el-T, Ellidir RA, Bushara AI, et al. (2014) Filicide and suicide in a family by paraphenylenediamine poisoning: a mother who committed suicide and poisoned her four children of which one died. *Toxicol Ind Health* 30: 679-682.
12. Sir Hashim M, Hamza YO, Yahia B, Khogali FM, Sulieman GI (1992) Poisoning from henna dye and paraphenylenediamine mixtures in children in Khartoum. *Ann Trop Paediatr* 12: 3-6.
13. White JM, Kullavanijaya P, Duangdeeden I, Zazzeroni R, Gilmour NJ, et al. (2006) p-Phenylenediamine allergy: the role of Bandrowski's base. *ClinExp Allergy* 36: 1289-1293.
14. Prabhakar Y, Kamalakar K (2012) Hair dye poisoning: A report of three cases. *J NTR Univ Health Sci* 1:46-48.
15. Senthilkumaran S, Thirumalaikolundusubramanian P (2015) Acute hair dye poisoning: Lurking dangers. *J Mahatma Gandhi Inst Med Sci* 20: 33-37.
16. Chrispal A, Begum A, Ramya I, Zachariah A (2010) Hair dye poisoning--an emerging problem in the tropics: an experience from a tertiary care hospital in South India. *Trop Doct* 40: 100-103.
17. Singh AP, Jatav OP, Dudani M (2009) Myocarditis in hair dye poisoning. *Indian Heart J* 61: 306-307.