



ORIGINAL ARTICLE

ENT manifestations of Kala Pathar poisoning; An experience at Nishtar Hospital, Multan, Pakistan.

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Article Citation: Sheikh MS, Shafique A, Nisar MH, Shaid MS, Majeed S, Saleem M. ENT manifestations of Kala Pathar poisoning; An experience at Nishtar Hospital, Multan, Pakistan. Professional Med J 2022; 29(10):1590-1594. <https://doi.org/10.29309/TPMJ/2022.29.09.4196>

ABSTRACT... Objective: To know the demographic representation along with possible ENT manifestations of Black Stone Poisoning. **Study Design:** Cross Sectional study. **Setting:** Emergency and Wards in Nishtar Hospital Multan. **Period:** April 2018 to December 2018. **Material & Methods:** The study was executed in total of 156 Patients with history of Black stone ingestion in Emergency and wards in Nishtar Hospital Multan. All included patients were having history of black stone ingestion along with ENT complications following black stone intake. All cases were excluded who were dead or unresponsive. **Results:** Most of the cases, 119 (76.3%) were females, between the age group of 11-20 years (41.66%) and 129 (82.7%) belonged to rural areas. Out of 156 subjects, 137 (87.8%) ingested black stone with intentions of suicide. It was noted that 102 (74.4%) patients ingested black stone due to family related issues. Most common ENT manifestations were hoarseness of voice in 149 (95.5%), uvula and pillars edema in 143 (91.7%), tongue edema in 140 (89.7%) and neck swelling in 131 (84.0%). **Conclusion:** Women more than men, young people more than any of the other ages, rural population more than urban and people living in stressful environment are prone to Black stone ingestion. Lips and tongue edema, neck swelling, odynophagia, vestibulitis, limited mouth opening, ulceration of buccal and nasal mucosa and epistaxis are the commonest ENT manifestations of black stone poisoning.

Key words: Black Stone Poisoning, Females, Suicide, Tongue Edema.

INTRODUCTION

Suicide is the act or an instance of taking one's own life voluntarily and intentionally. According to WHO one million people die from suicide every year. It is the third leading cause of death in 15-44 years age group. In the past 50 years, suicide rates have increased to 60%.¹ Black stone is a low-cost and readily available hair dye in Pakistan. Using black stone as a suicidal tool is rising in Southeast Asia as reported mortality reaching up to 23.92% with treatment.² Paraphenylene Diamine (PPD), an active principle of black stone is a coal tar derivative and is used as hair dying agent after mixing with hydrogen peroxide and ammonia. It is also used for tattooing due to its darkening effect when it is mixed with henna.^{3,4} Paraphenyl Diamine (PPD) is brown or black color substance highly toxic and a good hydrogen donor, easily soluble in hydrogen peroxide but

insoluble in water. It contains harmful chemicals which directly affect the skin and enter into skin and start work to poisonous on systems of body. PPD mobilized by electron oxidation with an active radical cytochrome P450 which can be further oxidized.⁵

The signs and symptoms include anaphylaxis reaction with swelling over the face and the oral cavity, dysphagia, and also injury to the pharynx, tongue and upper gastrointestinal tract (GIT).⁶ The oedema of the face, neck, pharynx, tongue, and larynx is so severe that it often requires tracheostomy.⁷

Above mentioned factors ultimately lead to respiratory distress that can be fatal. PPD ingestion is regularly seen in younger women following some family, financial or social

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Article received on: 26/09/2019
Accepted for publication: 28/12/2019

problems. This study was done to know the demographic representation along with possible ENT manifestations of Black Stone Poisoning. We mainly wanted to know the ENT manifestations so that we can easily cope with the complications in best possible way in no time as till date there is no known antidote. Other than suicide, homicide and accidental cases are also encountered so by arranging such studies and enhancing awareness campaigns, such accidents and purposeful homicide can be avoided.

MATERIAL & METHODS

The study is designed based on observations and history taking focusing mainly the clinical ENT manifestations of Black stone poisoning, within duration of 9 months from April 2018 to December 2018. The study was executed in total of 156 Patients with history of Black stone ingestion in Emergency and wards in Nishtar Hospital Multan. All included patients were having history of black stone ingestion along with ENT complications following black stone intake. All cases were excluded who were dead or unresponsive.

After taking consent each patient was examined thoroughly to learn all ENT complication possibilities. Approval from the ethical committee of the institution was taken before the start of this study. (19400)

A predesigned proforma was used to gather data which covers demographic details (age, sex, residential Area, literacy status and psychosocial status), history in relation to intention of black stone ingestion and all the possible ENT related illustrations. To diagnose black stone poisoning, clinical symptoms and information from the patient's attendant was assembled.

Data was analyzed by SPSS version 21.0. Variables like gender, area of residence, literacy status, reason for ingestion of black stone, marital status and ENT manifestations were represented in terms of frequencies and percentages.

RESULTS

Out of a total of 156 patients with history of Black Stone ingestion, 119 (76.3%) were female and

37 (23.7%) were male. Male to female ratio was 1:3.2. Most cases were between the age group of 11-20 years (41.66%). There were 129 (82.7%) patients who were residents of rural area and remaining 27 were from urban areas.

Out of 156 subjects, 137 (87.8%) ingested black stone with intentions of suicide, 13 (8.3%) patients were somehow forced to swallow black stone and remaining 6 (3.8%) were the accidental cases all of whom were children in age group 0-10.

We noted that 102 (74.4%) patients ingested black stone due to family related issues followed by socioeconomic problems 17 (12.4%) and then psychological 9 (6.6%) and other issues 9 (6.6%).

Coming towards ENT manifestation, Lips edema was seen in 131 (84.0%) subjects, tongue Edema in 140 (89.7%), uvula and pillars edema in 143 (91.7%), ulceration of oral mucosa in 99 (63.5%), limited mouth opening in 70 (44.9%) and odynophagia in 122 (78.2%).

Neck swelling was seen in 131 (84.0%). Laryngeal crepitus was noted in 125 (80.1%), stridor in 99 (63.5%), hoarseness of voice in 149 (95.5%) and respiratory distress due to all these complications in 134 (85.9%).

Considering nasal area, vestibulitis was the most frequent complaint comprising 62.18% of total nasal complaints. Epistaxis was seen in 53 (34.0%) subjects and ulceration of nasal mucosa in 84 (53.8%).

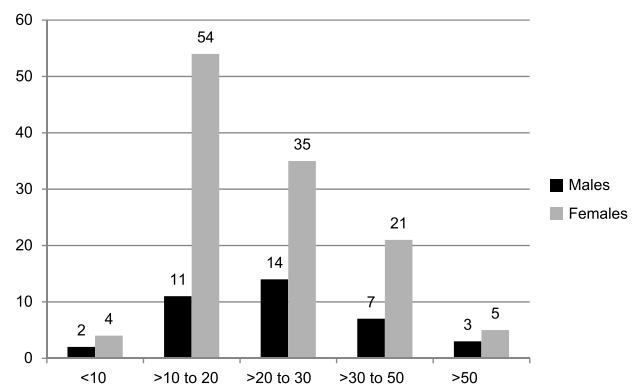


Figure-1. Distribution of patients in terms of age groups and gender

Characteristics		Number (%)
Age Group (Years)	0-10	6 (3.8%)
	> 10-20	65 (41.7%)
	>20-30	49 (31.4%)
	>30-50	28 (17.9%)
	>50	8 (5.1%)
Gender	Male	37 (23.7%)
	Female	119 (76.3%)
Intentions Behind Black Stone Ingestions	Suicide	137 (87.8%)
	Homicide	13 (8.3%)
	Accidental	6 (3.8%)
Reasons	House Conflict	102 (74.4%)
	Psychological problems	9 (6.6%)
	Socioeconomic	17 (12.4%)
	Others	9 (6.6%)
Area of Residence	Urban	27 (17.3%)
	Rural	129 (82.7%)
Marital Status	Married	108 (69.2%)
	Unmarried	48 (30.8%)
Education	Illiterate	107 (68.6%)
	Literate	49 (31.4%)
Socioeconomic Status	Low	115 (73.7%)
	Moderate	39 (25.0%)
	High	2 (1.3%)

Table-I. Characteristics of patients (n=156)

Complaints		Number (%)
Complaints Associated With Nose	Epistaxis	53 (34.0%)
	Vestibulitis	97 (62.2%)
	Ulcerated Nasal Mucosa	84 (53.8%)
Throat Complaints	Lips Edema	131 (84.0%)
	Tongue Edema	140 (89.7%)
	Uvula & Pillars Edema	143 (91.7%)
	Oral Mucosa Ulcer	99 (63.5%)
	Limited Mouth Opening	70 (44.9%)
Neck & Laryngeal Complaints	Odynophagia	122 (78.2%)
	Neck Swelling	131 (84.0%)
	Laryngeal Crepitus	125 (80.1%)
	Respiratory Distress	134 (85.9%)
	Stridor	99 (63.5%)
	Hoarseness of Voice	149 (95.5%)

Table-II. Association of nose, throat, neck and laryngeal complaints among patients (n=156)

DISCUSSION

Black stone (Kala Pathar) ingestion is the emerging

health issue. Black stone in compounded form mixed with henna is being consumed for hair dyeing and for suicide as well.

In this study, 156 patients were noted and majority of them (76.3%) were females. This has also observed by others.⁸ Another local study from D.I. Khan⁹ noted that 94.7% patients were female. Abbas M et al¹⁰ in another local study from Bhakkar found that 96% patients reported with black stone ingestion were female. Being a male dominant society, the reason for this female predominance as found in our study could be family pressure, financial issues and socioeconomic problems where females are more pressurized in our society. Same result was deduced in a research work done in Iran.¹¹

In the present study, most cases were between the age group of 11-20 years (41.66%) whereas a total of 120 (76.9%) cases were below 30 years of age. It is a well established fact that young age groups are involved more with black stone poisoning. Earlier, Akbar MA and colleagues¹² from the same institute found that mean age of the cases involved in black stone poisoning was 25.5 years with standard deviation of 4.56 years. In another study from south India¹³, it was seen that most of the patients were below the age group of 30 years.

We recorded that 108 (69.2%) patients were married. These findings were very different to another local study⁹ where it was seen that 71.1% patients were unmarried. The reason for this many unmarried cases could be that the mentioned study⁹ had 65.3% cases in between the age of 15 to 24 years which is quite a young age as compared to our findings where we saw most of the patients in the age group of 20 to 30 years of age. On the other hand, Khuhro BA and colleagues from Nawabshah¹⁴ noted that majority of the cases (56.3%) presenting with black stone poisoning were married. Early marriages are quite common in rural parts of our country and especially in low socioeconomic populations. We also noted that most patients, 122 (78.2%) belonged to rural areas, were illiterate 107 (68.6%) and had low socioeconomic status 115

(73.7%). It has been observed in another local study⁹ as well where 71.1% patients belonged to low socioeconomic status. Khuhro et al from Sindh Province of Pakistan¹⁴ revealed that 93.8% of the cases were from low socioeconomic status. An earlier study done from our institute¹² saw all the cases presenting with black stone poisoning belonged to low socioeconomic status. In the present study, presence of black stone poisoning mostly in patients from rural areas was quite consistent to the current findings.

In the current work, it was found in cases that large proportion (87.8%) of black stone ingestion was intended aiming suicide. Another study⁹ noted that PPDA intoxication was aimed for suicide in 94.7% cases while a previous study from center¹² showed that 60% of the cases had intended suicide. Our finding and many others also proved that accidental black stone ingestion is less common. In our study, all 6 cases of accidental ingestions appeared to be in the age group of less than 10 years of age.

Ingestion of Black stone is followed by series of lethal complications. Among those Lips edema, tongue edema, Neck swelling, limited mouth opening and vestibulitis all contribute in developing respiratory distress requiring emergency tracheostomy.⁷

Mortality rates vary between 0.03% to 60%.¹⁵ Objectives focused in the study are local symptoms of ENT region to manage poisoning as early as possible using life saving procedures as there is no specific antidote till date.¹⁶ In a study from Kanpur, India, stridor was seen in 61.2 % patients.¹⁷ This is in accordance with our study as Stridor is seen in 63.46%. Same study¹⁷ recorded throat pain in 72.7% of the cases, change in voice in 83.6%. dysphagia 84.8% and difficulty in opening mouth in 87.3% of cases. These results are in accordance to our findings.

Upper airway obstruction because of cervicofacial oedema has been seen as the major and frequent manifestation in patients of black stone ingestion and it needs emergency tracheostomy. A study done by District Headquarter Hospital,

D.I. Khan, Pakistan⁹ noted that 94.7% cases had cervicofacial oedema while 76.3% in their study needed tracheostomy. Suliman SM et al⁸ from their 10 years experience noted cervicofacial oedema in all of their cases.

Limitations we faced during our project can be the result of illiterate subjects. In wards patients were under treatment that can effects the result too. Unresponsive patients or their attendants and especially those who could not communicate in the same language can be the suspects for some type of errors. Government should join hands with health care sectors to avoid mortalities caused by PPD poisoning and should ban the dye in market as its responsible for hundreds of deaths every year.

CONCLUSION

Women more than men, young people more than any of the other ages, rural population more than urban and people living in stressful environment are prone to Black stone ingestion. Lips and tongue edema, Neck swelling Odynophagia, Vestibulitis, limited mouth opening, ulceration of buccal and nasal mucosa and epistaxis all can contribute to lethal damages in human body. For doctors to diagnose and for laymen to take the victim earlier to the nearest hospital these signs are useful enough. Public awareness campaigns should speed up to avoid such extreme cases.






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