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PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.1318670>Available online at: <http://www.iajps.com>**Research Article****RENAL FAILURE IN PARAPHENYLENE POISONING**¹Ferhat Jabeen, ²Sidra Jamil, ²Asad Tahir¹Mayo Hospital Lahore²Sheikh Zayed Hospital Rahim Yar Khan**Abstract:**

Objective; To determine the frequency of acute renal failure in cases of parapyhenylene poisoning.

Methodology; This study was a descriptive cases series conducted at Services Hospital, Lahore during July 2017 to April 2018. In this study the cases of suspected parapyhenylene poisoning within last 24 hours of either gender and adult range of age i.e. > 12 years were included. The diagnosis was confirmed by the history of its poisoning by either patients or the accompanying attendants. The cases with already known history of liver or renal failure were excluded. There cases underwent serum urea and creatinine every other day for total 1 weeks where final outcome was seen and the diagnosis of acute renal failure was made when urea level was > 30 mg/dl and serum creatinine > 2 mg/dl.

Results; In this study there were total, 40 cases of parapyhenylene poisoning. The mean age at presentation was 22.78±8.21 years. ARF was developed in 10 (25%) of the case. There was no significant difference in terms of age and gender with p values of 1.0 and 0.88. ARF was significantly high in cases that took it orally where it was seen in 10 (20.83%) out of 48 cases and none of the two cases with trans dermal absorption with p value of 0.001. There was no significant difference in terms of intention with p= 1.0.

Conclusion; Acute renal failure is seen in every 4th cases of parapyhenylene poisoning and it is significantly high in cases that take it orally.

Key words: Paraphenylene, ARF

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INTRODUCTION:

Suicide is one of the most common cause of death in the young population after the road traffic accidents and according to an analysis, more than half a million mortalities per year are caused by this globally [1]. The number of these are increasing and the trend is maximum by far in the last fifty years [2].

There are many modalities tried for this purpose. Self inflicting injuries are the most commonly seen followed by various substance intakes. Paraphenylenediamine i.e. PPD (Kala pathar) is a new trend in the developing countries and is a hair dyeing agent which is widely available in the market. It is highly toxic and can be toxic both when taken orally or by trans-dermal absorption which is usually rare [3].

PPD is highly soluble in hydrogen peroxide and is actively metabolized by cytochrome P450 via electron oxidation and result into an active radical that can be very toxic and can lead to anaphylaxis [4,5]. It can lead to a syndrome of clinical symptoms comprising pain the throat, erythema, edema of pharynx, larynx and tongue [6,7]. It can also lead to rhabdomyolysis which releases myoglobin and other chemicals that are not only directly toxic to renal tubules but they can deposit at the microtubule and blockage can end up in injury and then later on to renal failure. There is a range of cardiac complications in particular the arrhythmias associated with this as well [8-10].

OBJECTIVE:

To determine the frequency of acute renal failure in cases of paraphenylenediamine poisoning.

MATERIAL & METHODS:**Study design;**

Descriptive case series

Study Setting;

Services Hospital, Lahore

Duration;

July 2017 to April 2018

Sampling technique;

Non-probability consecutive sampling

In this study the cases of suspected paraphenylenediamine poisoning within last 24 hours of either gender and adult range of age i.e. > 12 years were included. The diagnosis was confirmed by the history of its poisoning by either patients or the accompanying attendants. The cases with already known history of liver or renal failure were excluded. There cases underwent serum urea and creatinine every other day for total 1 weeks where final outcome was seen and the diagnosis of acute renal failure was made when urea level was > 30 mg/dl and serum creatinine > 2 mg/dl.

Statistical analysis;

The data was entered and analysed by using SPSS version 23.0. Post stratification chi square test was used and p value < 0.05 was considered as significant.

RESULTS:

In this study there were total, 40 cases of paraphenylenediamine poisoning. The mean age at presentation was 22.78 ± 8.21 years as in table I. ARF was developed in 10 (25%) of the cases. There was no significant difference in terms of age and gender with p values of 1.0 and 0.88 (table II). ARF was significantly high in cases that took it orally where it was seen in 10 (20.83%) out of 48 cases and none of the two cases with trans dermal absorption with p value of 0.001 as in table III. There was no significant difference in terms of intention with p= 1.0.

Table No I. Variables in study subjects

| | Mean | Range |
|-----------------------------|-------------------|-------------|
| Age | 22.78 ± 8.21 | 13-44 years |
| Weight | 43.67 ± 11.34 | 24-89 kg |
| Duration of poisoning (hrs) | 6.45 ± 2.47 | 1-20 hours |

Table No II. Acute renal failure vs Demographics

| Demographics | | ARF | | Significance |
|--------------------|--------|------------|-------------|--------------|
| | | Yes | No | |
| Gender | Male | 4 (25%) | 12 (75%) | p= 1.0 |
| | Female | 6 (25%) | 18 (75%) | |
| Age groups (Years) | <30 | 8 (22.22%) | 8 (77.78%) | p= 0.88 |
| | >30 | 2 (24.28%) | 12 (75.72%) | |

Table No III. Acute renal failure vs Poisoning parameters

| Poisoning parameters | | ARF | | Significance |
|----------------------|--------------|-------------|-------------|--------------|
| | | Yes | No | |
| Route | Oral | 10 (20.83%) | 38 (79.17%) | p= 0.001 |
| | Trans-dermal | 0 (0%) | 2 (100%) | |
| Intent | Suicidal | 9 (20%) | 36 (80%) | p= 1.0 |
| | Accidental | 1 (20%) | 4 (80%) | |

DISCUSSION:

PPD is a highly toxic substance which is being used as hair dye in developing continents like Africa and Asia and is readily available. It can virtually affect any organ of the body and renal failure is amongst the most notorious one; usually its secondary to rhabdomyolysis and myoglobin release which is nephrotoxic. The high degree of side effect profile is due to absence of its specific antidote.

In the present study the ARF was developed in 10 (25%) out of the 40 cases and all of these cases took it orally. This was also supported by the findings of Khan N et al, where in their study they found this suicidal attempt in 94.74% of cases and ARF was seen in 22% of the cases that were exposed to this [8]. Nirmala and Ganesh et al also found that in more than 90% of the cases people took it for suicidal intention [11]. According to a study done by Tiwari D et al from India, even high results were seen and ARF was seen in 38% of the cases [12].

Akbar et al and Chrispal et al also found that the renal failure is seen in 18-23% of the cases and it was more common in cases that had it orally, which was similar to the present study where where it was seen in 10 (20.83%) out of 48 cases and none of the two cases with trans dermal absorption with p value of 0.001 [13,14].

CONCLUSION:

Acute renal failure is seen in every 4th cases of paraphenylene poisoning and it is significantly high in cases that take it orally.

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