

ACUTE KIDNEY INJURY FOLLOWED BY PARAQUAT POISONING WITH RELATIVE ABSENCE OF PULMONARY AND RENAL COMPLAINTS : STORY OF A SURVIVOR

Mrinal Saha^{1*} Merina Arjumand² M A Sattar³ Sujat Paul⁴

Abstract

A 16 years old girl admitted in the hospital after paraquat ingestion. She had oral ulceration and difficulty in swallowing. All her vital signs were normal including clear both lung fields. After few days, her tongue found coated with whitish debris. Her chest X-ray was normal but creatinine was 7.45 mg/dL despite normal urine output. After 2 cycle of hemodialysis her creatinine became normal. She had 2 unit of blood transfusion. After 3 weeks of hospital treatments she was discharged from hospital with all normal routine investigations including High Resolution Computed Tomography (HRCT) of both lungs. After one month of home stay she was alright on her last follow up.

Key words

Paraquat poisoning; AKI; Lung fibrosis; Survival.

Introduction

Paraquat is classified as bipyridyl compounds¹. Paraquat's herbicidal effects were discovered in the late 1950s and the product was first sold in 1962. It is world's second largest selling weed killer and is registered approximately 85 countries². It is a fast-acting contact herbicide which is effective shortly after application and is rapidly deactivated on contact with soil, having no residual effects in the soil^{1,2}. Its normal use causes no adverse effects on wildlife or the environment. It is highly toxic if ingested even in a small amount^{1,2,3}.

1. Student of MD (Medicine)
Chittagong Medical College, Chittagong.
2. Student of MD (Nephrology)
Chittagong Medical College, Chittagong.
3. Associate Professor of Medicine
Chittagong Medical College, Chittagong.
4. Professor of Medicine
Chittagong Medical College, Chittagong.

***Correspondence:** Dr. Mrinal Saha

E-mail : drmrinalsaha82@gmail.com

Cell : 01712 173226

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Case Report

A previously healthy 16 years old girl was admitted to Medicine Ward, Chittagong Medical College Hospital through emergency department on 08.09.2017 after a day of ingestion of unknown quantity of a liquid poison. Following ingestion she had burning sensation on her throat with vomiting for 2 times. After 3-4 hours of sleep when she woke up she had burning in her throat with difficulty in swallowing. For this she could not take her food properly. Then she had some anti-ulcer medications from local pharmacists but condition was static. Her situation was progressively deteriorating. The next day she got admitted to medicine ward with the complaints of burning throat, nausea, vomiting with oral ulceration. During this period she did not have complaints about respiratory distress, convulsion or any altered mental state. Her urine output was normal. After admission she had vomiting for 2-3 times, contents were mainly watery and not blood mixed. She had mild dry cough. During Examination she was fully conscious and co-operative. She had red ulcers on her oral cavity and lips. She was not anemic, non-icteric, and not cyanosed. Her nails and hands had no poisonous stain during examination. Her pulse was 98/min, BP -110/70 mm of Hg, RR - 20/min, Temp-99° F with SPO₂-97% without O₂.



Fig 1 : Paraquat tongue as seen on the third day of ingestion

On query, her mother states that out of anger she took this poison in an attempt to commit suicide. She could not mention the name of the poison but

told that they use this to peel of unwanted herbs in their garden. Her father was requested to bring that poison bottle from which she took the liquid. He failed to bring the bottle that day because of distance.

The next day her oral ulcer cavity became very severe with some bleeding points. She was almost unable to eat. Her tongue turned into white with edematous lips. With this characteristic appearance of her tongue, she was suspected as a case of paraquat poisoning even though she had no respiratory, renal or hepatic complaints. It was presumed that she took two sips of liquid poison which will not less than 5-7 ml as per her statement.

Her initial treatment was started with antibiotic, analgesic and anti-ulcerant with anti-fungal oral gel. She was advised some investigations.

The next day her father brought the same poison bottle and it was paraquat. The Diagnosis was confirmed as paraquat poisoning. Meanwhile, her investigations were reviewed. Because of high creatinine level (7.45 mg/dL) she was diagnosed as AKI due to paraquat poisoning despite having relative absence of anuria, oliguria or respiratory distress. She was shifted to Nephrology ward for dialysis.

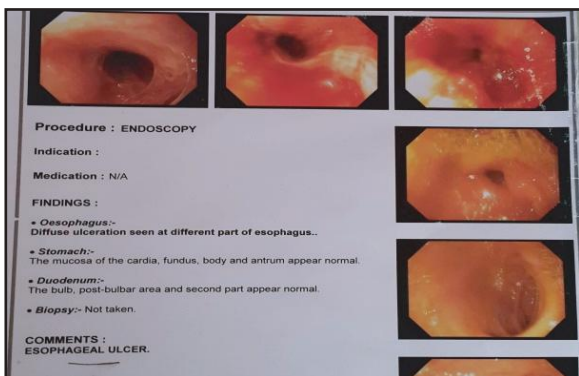


Fig 2 : Endoscopy of upper GIT

During her stay in the nephrology ward she had no respiratory complaints except cough on few occasions. Her follow up hematological report reveals moderate to severe anemia. She had hemodialysis for two times with femoral catheter and had 2 unit of blood transfusion along with dialysis. After first dialysis her creatinine became 2.9 mg/dl and after second setup it was 0.6mg/dL.

After 10 days she was again shifted to medicine ward. She maintained oxygen saturation almost 100% without oxygen. As she was anemic further one unit of blood transfusion was done. Her oral ulcers were healing slowly. She was discharged from hospital on 21st day of her admission with all normal vital signs. Before discharge all her investigations were normal including HRCT of lungs. She came for a follow up after 2 weeks and advised some routine hematological investigations with a Chest X-ray. Those were normal and her oral ulcers were almost healed.

She had no problem during swallowing. On her second visit after 1 month of her discharge she was completely alright.

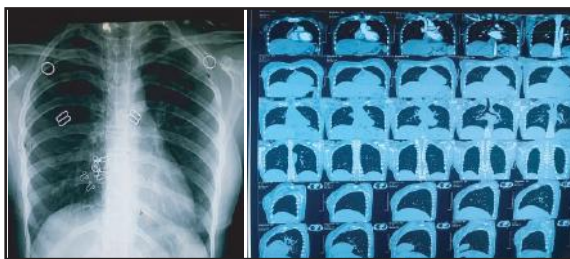


Fig 3 : Chest X-ray and HRCT of lungs

Discussion

Paraquat is a broad spectrum liquid herbicide associated accidental & intentional ingestion. Toxicity mainly occurs due to ingestion. It causes irritation, ulcer to the oral cavity, oropharynx, esophagus. Multiple organ (Cardiac, respiratory, hepatic and renal) failure may occurs. But pulmonary features are predominant and the usual cause of death. It's fatality rate is very high (80%) in 20% solution of 8-10 ml³.

Paraquat patients are initially asymptomatic. In acute poisoning drug concentration in lungs higher than plasma. It's excretion is very slow and patient condition deteriorate slowly. Long time follow up is mandatory⁴.

Paraquat induced AKI needs to evaluate quickly as because it may present without anuria, oliguria^{4,5}. It is assumed that with moderate respiratory involvement the outcome is almost fatal, death occurs after 1-4 days. It has high affinity to alveolar cell because of chemical similarities of paraquat with naturally occurring poly amines^{2,5,6}.

Intensive care support is important for the treatment of paraquat poisoning as it commonly involves the lung parenchyma. With inhalation or contact with paraquat is less toxic. Decontamination is advised^{2,5}.

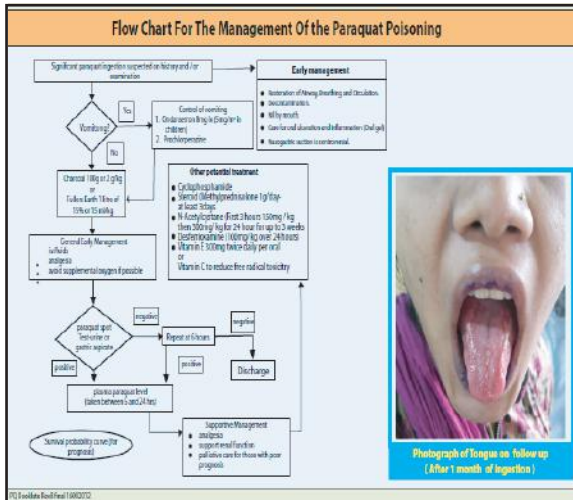


Fig 4 : Flow chart for the management of the paraquat poisoning

Conclusion

Nowadays, Paraquat is not an uncommon poisoning. Here in Chittagong Medical College we have attended 6-8 cases in last six months. The outcome was frustrating. Characteristic paraquat tongue may be the single clue in an inconclusive history. Typical tongue sign is a common feature in large amount of ingestion . It may be a late presentation (3-7 days after ingestion) but it may help in early diagnosis where patient is almost asymptomatic.

Contribution of Authors

Equal

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Disclosure

All authors declare no competing interest.

References

1. Lewis SN, Neal AL, Mary AH, Robert SH,Goldfrank NE. Goldfrank’sToxicologic Emergencies, Mac Grow Hill, NY.2013; 10 (12).
2. Paraquat Poisoning a Practical Guide To Diagnosis, First Aid And Medical Management. www4.syngenta.com.
3. Indika BG, Nicholas AB, Medical Management of Paraquat Ingestion, British Journal Of Clinical Pharmacology. 2011; 72(5): 745-757.
4. SafaeiAsl A, Dadashzadeh P. Acute kidney injury in patients with paraquatintoxication : A case report and review of literature. J Renal Inj Prev. 2016; 5(4):203-206. DOI: 10.151.71/Jrip : 2016.43.
5. Paraquat poisoning : www.uptodate.com/ contents/ paraquat-poisoning (Last accessed Date 16.07.18).
6. Gunja Jain, Mayank Gupta, Sudhir Mehta, Laxmikant Goyal, Prabhathansaly, Ajeet Singh . Paraquat Poisoning (Lethal Herbicide) : A Rare Case Report, International Multispeciality Journal Of Health (IMJH).2017; 3(5).