



Accidental Dapsone Poisoning and Acute Kidney Injury

Dear Editor,

Dapsone, an antimicrobial agent, is primarily used to treat leprosy, dermatitis herpetiformis, and as prophylaxis for *Pneumocystis jirovecii* pneumonia. Although effective, it has significant toxicities, including methemoglobinemia and hemolysis.¹ Acute kidney injury (AKI) associated with dapsone toxicity is rare, especially in toddlers. We present two instances of accidental dapsone poisoning associated with AKI. In both cases, the fathers had Hansen's disease and were being treated with dapsone.

The first case involves a 2-year-old male weighing 12 kg who presented with vomiting, lethargy, and cyanosis four hours after ingesting dapsone tablets. Examination revealed tachycardia (heart rate: 130 bpm), hypotension (blood pressure: 64/44 mmHg), and central cyanosis. Initial investigations showed a methemoglobin level of 25%, serum creatinine of 1.1 mg/dL, and urine output of 0.3 mL/kg/hr. The second case was an 18-month-old female weighing 10 kg, presenting with a similar clinical profile. Investigations revealed a methemoglobin level of 42%, serum creatinine of 1.5 mg/dL, and urine output of 0.2 mL/kg/hr. Both were managed with 100% oxygen, intravenous methylene blue, and fluid resuscitation. Both showed improvement within 24 hours, with cyanosis resolving and methemoglobin levels dropping to 13.3% and 15.1%, respectively. Renal function normalized, and they were discharged on day 5 with no residual renal impairment. Table 1 shows serial changes in creatinine, urine output, hemoglobin, and methemoglobin levels in cases 1 and 2, respectively.

Table 1: Serial changes in creatinine, urine output, hemoglobin, and methemoglobin levels of cases

Day of illness	Day 1		Day 3		Day 5	
	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2
S. creatinine (mg/dL)	1.1	1.5	0.9	1.0	0.8	0.9
Urine output (mL/kg/hour)	0.3	0.2	1.2	0.6	2.3	1.1
Hemoglobin (g/dL)	10.3	12.3	10.1	11.7	9.9	11.5
Methemoglobin (%)	25	42	21.3	23	13.3	15.1

AKI in dapsone poisoning can be prerenal due to hypoperfusion, vomiting, and diarrheal losses, and can be induced by dapsone as there is hypoxia due to methemoglobinemia, hemolysis and resultant hemoglobinuria, direct tubular toxicity, systemic inflammation, and allergic interstitial nephritis.² The cornerstone of management includes supportive care, oxygen supplementation, and the administration of methylene blue for methemoglobinemia. Intravenous

fluids are critical to correct hypovolemia and improve renal perfusion.³ In severe cases, hemodialysis may be considered to remove dapsone and its metabolites. The prognosis is often favorable with prompt intervention.⁴

Acknowledgement

We thank all the residents and staff who were involved in the care of this patient.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

Conflicts of interest

There are no conflicts of interest.

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References

1. Alyahya B, Alalshaikh A, Sabbahi G, Alnowiser M, Al-Mohawes M. Methylene blue infusion to treat severe dapsone-induced methemoglobinemia in a pediatric patient. *Cureus* 2021;13:e18853.
2. Goyal A, Daneshpajouhnejad P, Hashmi MF, Bashir K. Acute kidney injury. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK441896> [Last accessed on 2024 June 01].
3. Toker I, Yesilaras M, Tur FC, Toktas R. Methemoglobinemia caused by dapsone overdose: Which treatment is best? *Turk J Emerg Med* 2016;15:182–4.
4. Thunga G, Sam KG, Patel D, Khara K, Sheshadhri S, Bahuleyan S, et al. Effectiveness of hemodialysis in acute dapsone overdose—a case report. *Am J Emerg Med* 2008;26:1070.e1–4.

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How to cite this article: Abhinay A, Agarwal A, Kumar N, Prasad R. Accidental Dapsone Poisoning and Acute Kidney Injury. *Indian J Nephrol*. doi: 10.25259/IJN_305_2024

Received: 13-06-2024; Accepted: 26-06-2024;
Online First: 14-08-2024; Published: ***

DOI: 10.25259/IJN_305_2024

