Acalypha indica–induced hemolytic crisis and methemoglobinemia complicated by acute kidney injury in an undiagnosed G6PD-deficient adult

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Background: Glucose-6-phosphate dehydrogenase (G6PD) deficiency is a common inherited enzymatic disorder that predisposes red blood cells to oxidative injury. *Acalypha indica*, a traditional herbal plant widely consumed in South Asia, contains oxidant compounds capable of triggering hemolysis and methemoglobinemia in susceptible individuals. Severe complications, such as acute kidney injury (AKI), are rarely reported.

Case Presentation: A 24-year-old previously healthy man presented with dark urine, exertional dyspnea, malaise, and epigastric pain one day after consuming *A. indica* leaves. He was febrile, pale, icteric, tachycardic, and tachypneic. His oxygen saturation was 86% on room air and responded poorly to high-flow oxygen. Arterial blood gas analysis demonstrated a normal partial pressure of oxygen despite persistent desaturation on pulse oximetry, suggesting methemoglobinemia, which was supported by bedside color-chart estimation.

Investigations revealed severe anemia (hemoglobin 5 g/dl), elevated lactate dehydrogenase (3,500 U/l), reticulocytosis (16%), and indirect hyperbilirubinemia. Peripheral blood film showed bite and blister cells consistent with oxidative hemolysis, while the direct Coombs test was negative. A diagnosis of *A. indica*–induced hemolytic crisis with methemoglobinemia in suspected G6PD deficiency was made.

As methylene blue is contraindicated in G6PD deficiency, management included high-flow oxygen, intravenous ascorbic acid, hydration, and packed red cell transfusions. Despite initial stabilization, the patient developed oliguric AKI with refractory hyperkalemia and metabolic acidosis, requiring three sessions of hemodialysis. Renal function gradually recovered, and he was discharged on day 15. Quantitative testing performed three months later confirmed G6PD deficiency.

Conclusion: This case demonstrates the life-threatening consequences of *A. indica* ingestion in individuals with undiagnosed G6PD deficiency. Early recognition of methemoglobinemia, avoidance of methylene blue, and prompt supportive management, including renal replacement therapy when required, are essential for favorable outcomes. Increased awareness of herbal oxidant triggers may help prevent similar presentations.

Keywords: Glucose-6-phosphate dehydrogenase deficiency (G6PD deficiency), *Acalypha indica*, acute hemolytic anemia, methemoglobinemia, acute kidney injury, herbal medicine toxicity.