Austin Journal of Clinical Case Reports

Open Access

Austin Publishing Group

Case Report

Acute Kidney Injury Following Caesarean Section: A Case Report

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Received: April 27, 2023
Accepted: May 18, 2023
Published: May 25, 2023

Abstract

Acute Kidney Injury (AKI) is an infrequent pregnancy complication, often associated with Nonsteroidal Anti-Inflammatory Analgesics (NSAIDs) during the postpartum period. In this case study, a multiparous, 27-year-old woman presented to the Emergency department on day six after an uncomplicated Caesarean section with severe lower back pain. She was diagnosed with AKI and was admitted for management under a multidisciplinary team. Following appropriate treatment, she was discharged with complete recovery. Managing AKI postpartum requires meticulous and collaborative intervention to prevent potential long-term complications.

Keywords: Acute kidney injury; Post caesarean section; NSAIDs

Introduction

Acute Kidney Injury (AKI) is a severe medical condition characterized by a sudden impairment of renal function, leading to the accumulation of urea and other nitrogenous waste products and disturbances in fluid and electrolyte balance. AKI is associated with high mortality and morbidity rates, making it a significant public health concern. Although AKI during pregnancy is rare in developed countries, affecting 1 in 20,000 pregnancies [1], its incidence may be higher in regions with limited antenatal care and where unsafe abortions are performed [2]. The aetiology of AKI during pregnancy varies according to the trimester and may result from pre-renal, intrinsic, or post-renal causes Pregnancy-specific disorders like preeclampsia and HELLP syndrome may also cause AKI. The use of NSAIDs during the postpartum period is a known risk factor for the development of AKI. Other risk factors for AKI postpartum include pre-existing chronic kidney disease, preeclampsia, sepsis, and haemorrhage. Timely diagnosis and management of AKI are crucial to minimizing the risk of maternal and fetal complications. The management during pregnancy requires a multidisciplinary approach involving obstetricians, nephrologists, and critical care specialists.

Case Presentation

This case report describes a 27-year-old aboriginal female, gravida 2 para 2, who presented to the emergency department with AKI following an uncomplicated, elective caesarean section.

She had had an uneventful pregnancy, except for a COVID-19 infection at 20 weeks. She was known to have had a history of kidney stones managed conservatively in 2018. There had been no recurrence. Her antenatal screen, including the Glucose Tolerance test, was normal. Antenatal ultrasound at 34 weeks had demonstrated a large-for-gestational-age baby, so she underwent an elective repeat caesarean section at 39+2 weeks. She recovered well postoperatively, including a successful trial of void. She was discharged on day 2 with regular oral analgesia, including Paracetamol, Nurofen, and Tramadol PRN. On day six following surgery, she presented to the emergency department with worsening lower back pain which had been ongoing for several days. She denied any bowel or urinary symptoms. The patient's vital signs were normal on admission, and her physical examination was unremarkable. Blood tests revealed elevated creatinine and urea levels (? Put as a table), indicating AKI. She had a positive urine protein: creatinine ratio. A CT scan of the kidneys, ureters, and bladder showed no obstruction but subtly altered echogenicity of the renal cortices bilaterally, suggesting early changes of chronic pyelonephritis. Renal artery Dopplers were normal. Urine culture revealed enterococcus faecalis with mixed enteral flora.

A nephrologist reviewed the patient, who diagnosed AKI stage-3 likely secondary to NSAIDs and pre-renal dehydration. She was managed conservatively with IV Ceftriaxone, strict fluid balance, and oral prednisolone. The patient developed hyperkalaemia during monitoring, which was managed with oral Resonium, calcium gluconate, IV glucose 10%, and rapid

Citation: Kathawadia K, Aboda A, Khanal N, McCully B. Acute Kidney Injury Following Caesarean Section: A Case Report. Austin J Clin Case Rep. 2023; 10(3): 1284.

insulin. She was advised to avoid nephrotoxic medication. The patient's renal function gradually improved, and she was discharged on day 5 with a follow-up scheduled at 48 hours.

Discussion

AKI during pregnancy is uncommon, particularly in developed countries. However, it may still occur in at-risk populations due to various factors, creating singularly or, in combination, pre-renal, intrinsic, or post-renal insult [3,4]. Specific complications related to each trimester may also contribute to kidney injury [5]. In the early stages of pregnancy, AKI is most commonly associated with hyperemesis gravidarum, or Acute Tubular Necrosis (ATN) resulting from a septic abortion. AKI may also be associated with orogenic or systemic infections. Later in pregnancy or postpartum, AKI can result from severe preeclampsia, HELLP syndrome, thrombotic microangiopathy, acute fatty liver of pregnancy, ATN or acute cortical necrosis associated with haemorrhage [6].

Less commonly, it can follow Nonsteroidal Anti-Inflammatory Drugs (NSAIDs), acute pyelonephritis and urinary tract obstruction. NSAIDs are routinely used for postpartum analgesia, particularly after a caesarean section [6]. Although uncommon, AKI may develop in patients who receive NSAIDs if there are predisposing conditions such as volume depletion or preeclampsia [6].

Diagnosis of AKI during pregnancy involves a thorough medical history, physical examination, and review of medication use, as well as laboratory tests, including urine analysis, protein quantification, urine culture, and blood tests to evaluate for microangiopathic haemolysis and thrombocytopenia [7]. Imaging tests, including renal ultrasound or CT, may also be necessary to diagnose cortical necrosis or obstructive uropathy [8]. Occasionally, a renal biopsy may be necessary to confirm the diagnosis and to help with prognosis if evidence of impairment persists [9].

The management of AKI in the postpartum period includes correcting the underlying cause, such as discontinuing possible nephrotoxic agents such as NSAIDs, Angiotensin-Converting Enzyme (ACE) inhibitors, Angiotensin Receptor Blockers (ARBs), treating infections or haemorrhage and hypotension [3]. Fluids and electrolyte imbalances must be corrected, and dietary restrictions on potassium, phosphorus, sodium, and fluid intake may be necessary [3]. In cases of emergency, dialysis or kidney replacement therapy may be necessary to manage severe symptoms, such as pulmonary oedema, hyperkalaemia, or uremic symptoms [8,10]. Patients with moderate to severe AKI should have an outpatient nephrology review to monitor renal function and blood pressure to prevent the development of chronic kidney disease [11].

Conclusion

AKI in the postpartum period is a rare but severe complication of pregnancy. This case report highlights the unintended sequelae of administering NSAIDs for postoperative pain relief for routine postpartum care. It also demonstrates the value of multidisciplinary care to diagnose and manage appropriately for the best possible outcome, which in this case was preventing further renal damage.

References

1. Trakarnvanich T, Ngamvichchukorn T, Susantitaphong P. Incidence of acute kidney injury during pregnancy and its prognostic value for adverse clinical outcomes: A systematic review and meta-analysis. Medicine (Baltimore). 2022; 101: e29563.
2. Davidson B, Bajpai D, Shah S, Jones E, Okyere P, et al. Pregnancy-Associated Acute Kidney Injury in Low-Resource Settings: Progress Over the Last Decade. Seminar in Nephrology. 2022; 42: 151317.
3. Gaber TZ, Shemies RS, Baiomy AA, Aladle DA, Mosbah A, et al. Acute kidney injury during pregnancy and puerperium: An Egyptian hospital-based study. Journal of Nephrology. 2021; 34: 1611-1619.
4. Wang L, Tang D, Zaho H, Lian M. Evaluation of Risk and Prognosis Factors of Acute Kidney Injury in Patients with HELP Syndrome During Pregnancy. Frontiers in Physiology. 2021; 12: 650826.
5. Shah s, Verma P. Pregnancy-Related Acute Kidney Injury: Do We Know What to Do?. Nephron. 2023; 147: 35–38.
6. Bisson C, Dautel S, Patel E, Suresh S, Dauer P, et al. Preeclampsia pathophysiology and adverse outcomes during pregnancy and postpartum. Nephrology. 2023; 10.
7. Piccoli GB, Chatrenet A, Cataldo M, Torreggiani M, Attini R, et al. Adding creatinine to routine pregnancy tests: a decision tree for calculating the cost of identifying patients with CKD in pregnancy. Nephrology Dialysis Transplantation. 2023; 38: 148–157.
8. Wang R, Liu X, Li W, Tan Y, Qiu J, et al. Pregnancy-Associated Renal Cortical Necrosis and Nonenhanced Functional Magnetic Resonance Imaging: A Case Series. Kidney Medicine. 2023; 5: 100623.
9. Moroni G, Calatroni M, Donato B, Ponticelli C. Kidney Biopsy in Pregnant Women with Glomerular Diseases: Focus on Lupus Nephritis. J Clin Med. 2023; 12: 1834.
10. Alizada U, Sauleau EA, Krummel T, Moranne O, Kazes I, et al. Effect of emergency start and central venous catheter on outcomes in incident hemodialysis patients: a prospective observational cohort. Journal of Nephrology. 2022; 35: 977–988.
11. Chaibi K, Ehooman F, Pons B, Lefevre LM, Boulet E, et al. Long-term outcomes after severe acute kidney injury in critically ill patients: the SALTO study. Annals of Intensive Care. 2023; 13: 18.