

Perinephric Hematoma as a complication of Renal Biopsy in a Patient with IgA Nephropathy and Pre-existing Renal Dysfunction

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ABSTRACT

This case report discusses a 43-year-old male, a known case of Chronic Kidney disease, who developed significant complications after a renal biopsy which was performed to diagnose glomerular disease. The patient presented with severe left flank pain, which was later attributed to a large perinephric hematoma which is one of the expected complications in patients with low eGFR. The large perinephric hematoma necessitated intensive care, pain management, blood transfusions, and multidisciplinary action. This report highlights the challenges in managing post-biopsy complications in high-risk patients and underscores the importance of early recognition, vigilant monitoring, and a collaborative approach to care.

Keywords: chronic kidney disease; perinephric hematoma; post-biopsy complications; IgA nephropathy; Renal biopsy Complications.

INTRODUCTION

Renal biopsies are commonly performed for diagnostic purposes in patients with glomerular disorders. Renal biopsy is a critical diagnostic tool for evaluating glomerular diseases, providing insights into the severity and reversibility of renal pathology. However, its use must be carefully considered due to risks such as bleeding and hematoma formation [1]. While complications are generally rare, they can be more severe in patients with underlying kidney dysfunction, such as those with chronic kidney disease. Common complications include microscopic and gross hematuria, small perinephric hematoma formation, and in rare cases, large perinephric hematoma or renal failure. This case highlights the challenges encountered in managing a patient with a large perinephric hematoma following a renal biopsy, complicated by the patient's pre-existing renal dysfunction.

- The immediate post-biopsy imaging done as a protocol showed a small perinephric collection but the patient was clinically stable, and his haemoglobin was stable, hence he was discharged on the following day.

Presenting Complaint

The patient presented to the Emergency Department with sudden onset left flank pain and was not able to pass the urine 5 days after undergoing a renal biopsy.

Initial Post-Biopsy Course

Biopsy Report

- IgA nephropathy with 40% sclerosed glomeruli.

The table below provides a detailed timeline of a 43-year-old male patient's clinical course following the development of a significant perinephric hematoma as a complication of a renal biopsy. It highlights the progression of symptoms, diagnostic findings, and the multidisciplinary management strategies employed. This case emphasizes the complexities involved in addressing such complications in a patient with pre-existing chronic kidney disease and the critical importance of timely and coordinated care.

CASE REPORT

Patient Profile

- 43-year-old Male.
- Past Medical History: Hypertension (HTN), Persistent proteinuria, Microhaematuria, Renal dysfunction (serum creatinine 1.97mg/dL with eGFR of 37.2mL/min/1.73m²), nephritic syndrome. A kidney biopsy later diagnosed it as IgA nephropathy with chronicity.

TABLE 1: Post-Biopsy Clinical Course and Management.

Day 5 Post-biopsy 31/10/2024	<p>Arrival at ED: Severe left flank pain (onset 8–12 hours), elevated BP, left flank tenderness. Foley catheter inserted: Clear urine, no gross hematuria, which ruled out urinary obstruction, if any.</p> <p>Imaging: CT KUB – Large left perinephric hematoma extending to the psoas muscle.</p> <p>Labs: Haemoglobin: 9 g/dL (low) from 9.9, Creatinine: 1.97 mg/dL (same as pre-biopsy), eGFR: 37.2 mL/min, BP: 125/75 mmHg.</p> <p>Management in the ED:</p> <ul style="list-style-type: none"> • Pain management with tramadol, morphine, and perfalgan. • BP is controlled by using Amlodipine 10 mg stat. • IV fluids (DNS 60 mL/hr). • Conservative management, unless the hematoma worsens.
01/11/2024	<p>ICU Admission due to drop in haemoglobin, Severe pain for close monitoring</p> <p>Vitals on admission: HR: 96 bpm, RR: 29 breaths/min, BP: 117/75 mmHg, SpO2: 96% (room air). A urologist was consulted who decided to continue conservative management.</p>
02/11/2024	<p>Pain improved with management, however, renal function worsened.</p> <p>Labs: Haemoglobin: 6.5 g/dl. He was transfused with 2 units of packed RBCs.</p> <p>Follow-up CT KUB: Stable hematoma size, mild hydronephrosis of the left kidney likely secondary to the hematoma.</p>
03/11/2024	<p>Pain continued to improve, hemodynamically stable.</p> <p>Labs: Creatinine: 3.22 mg/dL</p> <p>BP was controlled with Amlodipine and bisoprolol. A Foley catheter was kept in situ until urology could reassess the need for drainage or stenting. He was also treated with prophylactic antibiotics.</p>
30/11/2024	<p>Labs; Cr (Creatinine): 1.83 mg/dL eGFR (Estimated Glomerular Filtration Rate): 43.3 mL/min/1.73m² Hb (Haemoglobin): 10.6 g/dL CRP (C-reactive protein): 4.6 mg/L Procalcitonin: 0.148 ng/mL</p>

TABLE 2: Laboratory Results and Trends Post-Renal Biopsy.

	29/10/24	1/11/24	2/11/24	3/11/24	4/11/24	30/11/24
Creatinine (mg/dL)	1.97	2.83	3.62	3.22	2.93	1.83
eGFR (mL/min/1.73m²)	-	24.5	18.4	21.1	23.5	43.3
Hb (g/dL)	9	6.5	9.1	10.9	10.8	10.6
CRP (mg/L)	-	99.8	168.9	174.1	166.1	4.6
Procalcitonin (ng/mL)	-	-	2.782	1.310	0.739	0.148

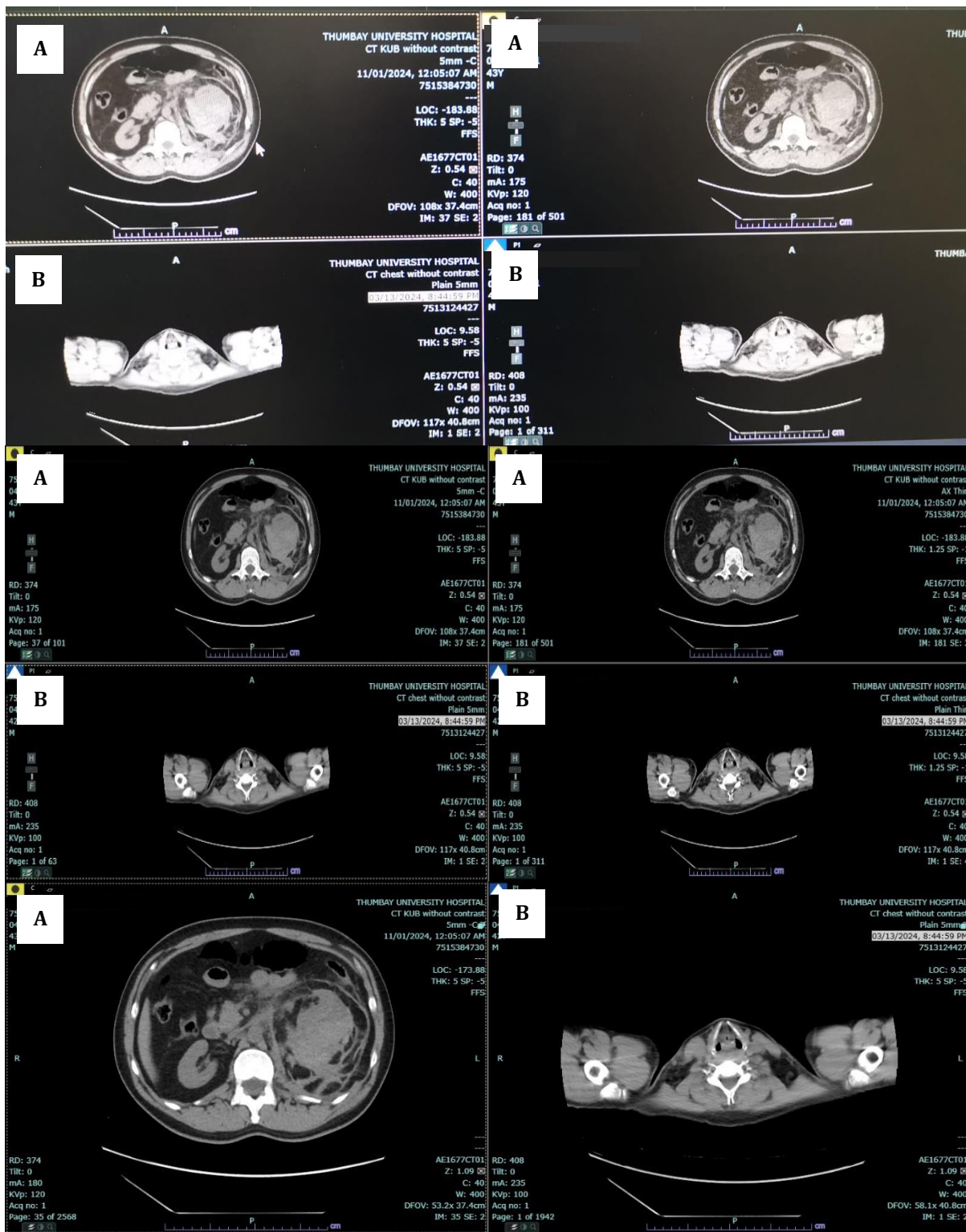


FIGURE 1: (A) Computed Tomography of the Kidneys, Ureters, and Bladder; (B) Computed Tomography of the Chest.

DISCUSSION

This case underscores the challenges of managing post-renal biopsy complications in patients with pre-existing kidney dysfunction. The IgA nephropathy complicated by renal dysfunction put him at higher risk for hematoma formation after the biopsy. Perinephric hematomas are a discrete entity of life-threatening medical emergencies where the diagnosis is often made later in the course often on the background of clinical suspicion, signs of developing shock, and a fall in haemoglobin [5].

Post-biopsy bleeding is the primary complication of renal biopsies, however, a retroperitoneal haematoma is an uncommon but severe bleeding complication with a nonspecific presentation [9]. One of the common clinical presentations for perinephric hematomas post-biopsy is the presence of haematuria [7], and despite the absence of this as well as conventional risk factors for severe post-biopsy complications, i.e. uncontrolled hypertension, advanced age, the patient developed a significant

perinephric hematoma, highlighting the unpredictable nature of such outcomes even in relatively low-risk profiles.

In some cases, perinephric hematoma development can be decreased by controlling BP, treating preoperative urinary tract infections, and shortening operating time during ureteroscopy[6]. In another study, it suggests that a few serious complications may also require invasive therapy[8].

For patients with creatinine >2 mg/dL, the risk ratio for post-biopsy bleeding was 5.89 when compared with patients with creatinine ≤ 2 mg/dL. Multivariate analysis using logistic regression found only serum creatinine at baseline predictive of post-biopsy bleeding [2]. Bleeding complications after renal biopsy, while generally rare, are significant and vary in severity. According to a systematic review of 87 studies encompassing 118,604 native percutaneous kidney biopsies, the reported incidence includes pain at the biopsy site (4.3%), perinephric hematomas (11%), the need for erythrocyte transfusion (1.6%) [1,3]. These findings underscore the importance of careful pre-procedural planning and vigilant post-procedure monitoring, even for minor symptoms.

This case underscores the importance of pre-procedure evaluation to mitigate risks associated with renal biopsy. Strategies such as real-time ultrasound guidance and patient selection criteria, including blood pressure control and assessment of coagulation profiles, are recommended to minimize complications. Furthermore, the choice of needle size and post-procedure monitoring are critical in high-risk patients, such as those with chronic kidney disease [4,10].

CONCLUSION

Post-renal biopsy complications are more challenging in patients with underlying renal dysfunction. Post-biopsy hematoma formation requires vigilant monitoring and a multidisciplinary approach to management [1]. In this case, the patient's renal dysfunction compounded the complexity of the post-biopsy complication.

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