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Sami Mahjoub Taha[1]*, Awad Al Kareem Abd El Geyoom[2], Mohammed El Imam M Ahmed[3], Nada Osman[4] and Musab Mahjoub Taha[5]

[1]Associate professor of urology. Faculty of Medicine University of Gezira- Sudan
[2]Residence of urology. Sudan Medical Specialization Board (SMSB), Sudan
[3]Professor of urology. Faculty of Medicine- University of Gezira -Sudan
[4]Assistant professor of oncology. Nation Cancer institute- University of Gezira- Sudan
[5]House officer, Gezira Hospital for Renal Disease and Surgery, Sudan

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***Corresponding author:** Sami Mahjoub Taha, University of Gezira Faculty of Medicine, Department of surgery, Associate professor of Urology, Sudan, Tel: 00249128151911; E-mail: samimahj@gmail.com

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Case Report

Spontaneous Rupture of the Kidney Due to Acute Lymphoblastic Leukemia: The First Episode and a Glance on the Literature

Abstract

Spontaneous rupture of the kidney consists of the atraumatic disruption of the renal parenchyma, followed by hemorrhage or leakage of urine into the perinephric space.

A17 years old male known case of Acute Lymphoblastic Leukemia (ALL), referred to the urology department with right loin pain and fever for 3days. There was no history of trauma. Investigations revealed low hemoglobin, low platelets 18000 and urine analysis showed pus cells 14-18 cell/HPF and RBCs 2-4 /HPF. Renal functions tests and coagulation profile were normal. CT urography showed bulky right kidney with mid pole laceration leaking of the contrast in the perinephric space.

Conservative treatment was done (Double j insertion-ultrasound guided aspiration). Postoperatively he was generally well, afebrile, pain subside and repeated abdominal U/S showed no collection. Conservative management can be appropriate where clinical signs stabilize.

Introduction

Spontaneous rupture of the kidney (SRK) is a rare condition usually occur as a complication of serious underlying diseases, which require immediate diagnostic evaluation in order to initiate the appropriate treatment.

Acute lymphoblastic leukemia (ALL) is the most frequent childhood malignancy. Extramedullary involvement of the kidneys is seen in around 7% when assessed by intravenous pyelography and defined as nephromegaly [**1**].

The affection of the kidney may be due to infiltration of kidneys by leukemic cells, nephrotoxicity, and metabolic changes arising from chemotherapy, radiotherapy, infections, treatment with nephrotoxic antibiotics, and intravascular coagulopathy may cause renal damage [**2,3**].

The prognosis of acute lymphoblastic leukemia (ALL) has improved due to intensive chemotherapy and better supportive therapy [**3**]. To the best of our knowledge, there is no report regarding spontaneous rupture of the kidney in children with ALL. We discuss conservative management of such a case.

Case Report

A17 years old male known case of Acute Lymphoblastic Leukemia (ALL) when he was12years old, he received treatment (Regimen-B phase1) e.g. vinblastine-daunorubicin-methotrexate-prednisolone-L. Aspara-Ara.c, and there was good response to the chemotherapy, 4month ago the condition relapsed again and accordingly he received daunorubicin-vincristine -dexamethasone- L. Aspara- Ara.c) ....in addition to supportive treatment (e.g. rehydration-blood transfusion-antibiotic.... etc.). He referred to the urology department with right loin pain and fever for 3days. There was no history of trauma, stone disease or surgery. On examination he was pale, pulse rate was 110/min, respiratory rate was 22/min, blood pressure was 110/60 mmHg.

Cardiovascular & respiratory systems unremarkable. Abdomen examination showed tender right loin and palpable liver 18 cm below the costal margin.

Investigations revealed complete hemogram showed low hemoglobin (7.8g/dl), therefor he received two units of packed RBCs, low platelets 18000 so transfuse 4 units of platelets. Urine analysis showed pus cells 14-18 cell/HPF and RBCs 2-4 /HPF. Renal functions tests and coagulation profile were normal.

Abdominal ultrasound (U/S) revealed right hypoechoic perinephric collection, no other abnormality. CT urography

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showed bulky right kidney with mid pole laceration leaking the contrast in the perinephric space with associated marginal enhancing perinephric collection (grade 4 renal injury) **[4]**, enlarge liver 21cm below costal margin and right side pleural suffusion, as shown in figure 1.

The patient was rehydrated and received antipyretic paracetamol, analgesia e.g. nifopam intramuscular and started empirical I.V antibiotics (ceftriaxone).

The plan was conservative treatment in a form of double J stent insertion and U/S guided extravasate aspiration. Under general anaesthesia right double J was inserted and attempts of U/S guided aspiration not succeed due to minimal collection. Foley's urethral catheter was fixed.

Postoperatively (within 48 hours) he was generally well, afebrile, pain subside and repeated abdominal U/S (second and 4^{th} days) showed no collection. In the 5^{th} day urinary catheter was removed and the patient discharge home on oral antibiotic and analgesia (Figure 2).

Discussion

Spontaneous rupture of the kidney (SRK) is a rare condition that was first described in 1856 by Wunderlich **[5]**. The process of SRK consists of the atraumatic disruption of the renal parenchyma, followed by hemorrhage or leakage of urine into the perinephric space. The most frequent etiologies of bleeding include renal carcinoma, angiomyolipoma and vascular disease of which periarteritis nodose is the most common **[6,7]**. Inflammation and cystic disease are less frequent. Rarely, no underlying abnormality of the kidney can be found [7]. Levine and his colleague had reported spontaneous ruptured kidney in chronic hemodialyzed patients as well as in uremic patients and in native kidneys of renal transplant recipients **[8-10].**

Figure 1: CT without contrast (red arrow) cortico-medullary laceration.

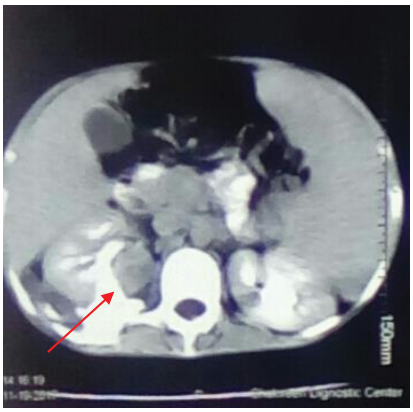

Figure 2: CT urography showed grade 4 renal injury with extravasation of the contrast (Red arrow).

The affection of the kidney in acute lymphoblastic leukemia is not common and the cause is usually uncertain, most of the reported cases were acute renal failure (ARF). In a few cases reports it is evident that ARF was due to leukemic infiltration or, tumor lysis syndrome and acute uric acid nephropathy, but no late renal complications were reported in any of the cases. The majority of cases were T-cell ALL with a white blood cell count within normal range **[1,11-13].**

Howard et al. suggested the children with ALL may developed urolithiasis due to glucocorticoids **[14].** Yetgin et al., reported that children of ALL may have renal damage and he raised the following points (i) ALL patients with renal infiltration, hypertension, or age <2 years, which is associated with a higher risk for kidney damage per se, and in patients subjected to loaded, long-term methotrexate treatment at frequent intervals. (ii) Frequency of renal damage may be underestimated because the blood biochemistry, urinalysis, and renal ultrasonography could not determine renal lesions **[15].**

McDougal et al. **[16]**, reviewed the English literature in 1975 and found 78 cases (58, 18, 10and 2 cases were due to tumor, vascular, Infection and idiopathic causes respectively); Cinman et al 21 reviewed from 1974 to 1985 and found 27 cases (63, 26, 7 and zero cases were due to tumor, vascular, Infection and idiopathic causes respectively); Zhang et al. **[17].** Reviewed from 1985 to 1999 and found 165 cases (61, 17, 4 and 6.7 cases were due to tumor, vascular, Infection and idiopathic causes respectively). Flank pains with disproportionate low Hemoglobin, low hematocrit level and elevated serum lactate dehydrogenase (LDH) level raises the suspicion of SRK [18]. In our case the patient was referred as perinephric abscess with fever and tender right loin area, when investigated by CT urography spontaneous rupture kidney was made with leakage of urine in the perinephric space.

Abdominal ultrasonography (U/S) is effective in the identification of renal/peri-renal fluid collection, although it may be difficult to differentiate between tumor and abscess **[10].** Here, CT scan may provide the aetiologic diagnosis and well as providing details of the contralateral kidney. There is little data on the use of magnetic resonance imaging (MRI), but it would be useful in situations where contrast enhance CT is contraindicated (eg. contrast allergy, pregnancy) **[19]**. Diagnostic accuracy of retroperitoneal hemorrhage was 100% sensitive in CT and MRI and 56% in U/S; and diagnosis of an underlying renal mass in CT yielded a sensitivity of 57% and specificity of 82% compared to 11% and 33% respectively in U/S **[20].** In the current case abdominal ultrasound was the initial work-up image requested and it was inconclusive, followed by CT urography and hence the diagnosis of SRK was made.

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In the treatment of these cases must consider that the commonest cause of SRK is tumor, of which benign and malignant nature have almost equal incidence and can occur in young and elderly population **[21]**. Bagley **[22].** Kendall et al. **[23],** and Novicki et al. **[24].** Advocate radical nephrectomy due to the possibility of a small clinically unapparent renal cell carcinoma. In Kendall's series, six cases of SRK were due to spontaneous rupture of small renal cell carcinoma that CT had failed to detect the small tumor at the time of acute haemorrhage. While Morgentaler et al. **[25].** Proposed nephrectomy for patients with non-fatty lesions (Exclusion of angiomyolipoma) on CT, which are suspicious for carcinoma. They recommended serial CT as the image of choice for follow-up. In contrast, Howalt & Squirs' **[26].** Have advised a conservative approach when diagnostic studies fail to demonstrate a significant pathology. Uson et al. **[27],** and Bosniak [28]. Advocated serial CT at 2-3 months interval until the hematoma resolves and a definite diagnosis may be possible. Bosniak claims that surgical exploration is not necessary in most unexplained cases because of the diagnostic accuracy of CT using 5mm sections.

In the context of conservative management, Gupta et al. **[29].** Recommended that drainage of hematoma should be individualized: a large infected hematoma needs drainage, while smaller uninfected hematoma should be left alone. In Zhang's review **[17].** Malignancy was present in 49 of 113 (43%) patients undergoing total nephrectomy; and in 64 of 113 (57%) patients one with normal kidney or benign disease underwent total nephrectomy. They have recommended that repeat imaging following resolution or evacuation of hematoma seems prudent to avoid unnecessary nephrectomy. In the recent case study there was no significant hematoma only perinephric urine collection in the CT, there for patient was treated conservatively by insertion of JJ stent in the right ureter and the extravasated urine aspirated ultrasound guided. Then the patient was followed by serial abdominal ultrasound and there was no recollection.

The study case was spontaneous grade 4 renal injury and the presentation was not hypovolemic shock due to bleeding, but infected perirenal collection, the place for successful conservative treatment is present and conservative management can be appropriate where clinical signs stabilize.

References

1. Hann IM, Lees PD, Palmer MK, Gupta S, Morris-Jones PH (1981) renal size as a prognostic factor in childhood acute lymphoblastic leukemia. Cancer 48: 207–209. Link: https://goo.gl/neEwcP

2. Fer MF, McKinney TD, Richardson RL, Hande KR, Oldham RK, et al. (1981) Cancer and the kidney: complications of neoplasms. Am J Med 71: 704–718. Link: https://goo.gl/zQ68uJ

3. Kopecna L (2001) late effects of anticancer therapy on kidney function in children with acute lymphoblastic leukemia. Bratisl Lek Listy 102: 357–360. Link: https://goo.gl/9y5emT

4. The American Association for the Surgery of the Trauma (AAST) injury scoring scale for kidney injuries. Link: https://goo.gl/6ExTiR

5. Wunderlich CRA (1856) Handbuch der Pathologie und Therapie. Stuttgart: Ebnert Seubert.

6. Zapzalka DM, Thompson HA, Borowsky SS, Coleman Steenson CC, Mahowald ML, et al. (1988) Polyarteritis nodosa presenting as spontaneous bilateral perinephric hemorrhage: management with selective arterial embolization. J Urol 164: 1294–1295. Link: https://goo.gl/1mgeQp

7. Kendall AR, Senay BA, Coll ME (1988) Spontaneous subcapsular renal hematoma: diagnosis and management. J Urol 139: 246–250. Link: https://goo.gl/58jXXd

8. Levine E, Grantham JJ, MacDougall ML (1977) Spontaneous subcapsular and perinephric hemorrhage in end-stage kidney disease: clinical and CT findings. AJR Am J Roentgenol 148: 755–758. Link: https://goo.gl/Vtbmwx

9. Milutinovich J, Follette WC, Scribner BH (1977) Spontaneous retroperitoneal bleeding in patients on chronic hemodialysis. Ann Intern Med 86: 189–192. Link: https://goo.gl/DN8CtM

10. Pak K, Tomoyoshi T, Nishimura N (1986) Spontaneous renal subcapsular hematoma in a patient undergoing hemodialysis. J Urol 135: 117–119. Link: https://goo.gl/Z8n93Y

11. Escobar H, Häffner K, Pohl M, Hopfer H, Determann O, et al. (2009) Acute renal failure associated with bilateral enlargement of the kidneys: a rare manifestation of acute lymphoblastic leukemia (ALL). Klin Padiatr221: 176–178. Link: https://goo.gl/scXzKX

12. Sato A, Sato A, Imaizumi M, Imaizumi M, Chikaoka S, et al. (2011) acute renal failure due to leukemic cell infiltration followed by relapse at multiple extramedullary sites in a child with acute lymphoblastic leukemia. Leuk Lymphoma 45: 825–828. Link: https://goo.gl/FjYvBP

13. Larsen G, Loghman AM (1996) acute renal failure with hyperuricemia as initial presentation of leukemia in children. J Pediatr Hematol Oncol 18: 191–194. Link: https://goo.gl/uq5rFz

14. Howard SC, Kaplan SD, Razzouk BI, Rivera GK, Sandlund JT, et al. (2003) Urolithiasis in pediatric patients with acute lymphoblastic leukemia. Leukemia17: 541–546. Link: https://goo.gl/QD9dEU

15. Sevgi Y, S Olgar, Tulin Aras, Mualla C ¸ Ali D, et al. (2015) Evaluation of Kidney Damage in Patients With Acute Lymphoblastic Leukemia in Long-Term Follow-Up: Value of Renal Scan. American Journal of Hematology 77: 132–139.Link: https://goo.gl/VkU6nE

16. McDougal WS, Kursh ED, Persky L (1975) Spontaneous rupture of the kidney with perirenal haematoma. J Urol 114: 181-184. Link: https://goo.gl/eF4KSg

17. Zhang JQ, Fielding JR, Zou KH (2002) Etiology of spontaneous perirenal haemorrhage: a meta-analysis. J Urol 167: 1593-1596. Link: https://goo.gl/Eh8TWV

18. Morgentaler A, Belville JS, Tumeh SS, Richie JP, Loughlin KR (1990) Rational approach to evaluation and management of spontaneous perirenal haemorrhage. Surg Gynecol Obstet 170: 121-125. Link: https://goo.gl/dDVpGQ

19. Belville JS, Morgentaler A, Loughlin KR, Tumeh SS. (1989) Spontaneous perinephric and subcapsular renal haemorrhage: evaluation with CT, US and angiography. Radiology 172: 733-738. Link: https://goo.gl/d11q1z

20. Zhang JQ, Fielding JR, Zou KH (2002) Etiology of spontaneous perirenal haemorrhage: a meta-analysis. J Urol 167: 1593-1596. Link: https://goo.gl/bmS45C

21. Cinman AC, Faner J, Kaufman JJ (1985) Spontaneous perinephric haemorrhage in a 65-year-old man. J Urol 133: 829-832. Link: https://goo.gl/udCXTm

22. Bagley DH, Feldman RA, Glazier W, Trauig A, Krauss P (1982) Spontaneous retroperitoneal haemorrhage from renal carcinoma. JAMA 248: 720-721. Link: https://goo.gl/zWpPKd

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23. Kendall AR, Senay BA, Coll ME (1988) Spontaneous subcapsular renal haematoma: diagnosis and management. J Urol 139: 246-250. Link: https://goo.gl/D85CKr

24. Novicki DE, Turlington JT, Ball TP (1980) the evaluation and management of spontaneous perirenal haemorrhage. J Urol 123: 764-765. Link: https://goo.gl/gyFzxz

25. Morgentaler A, Belville JS, Tumeh SS, Richie JP, Loughlin KR (2003) rational approach to evaluation and management of spontaneous perirenal haemorrhage. Surg Gynecol Obstet 170: 121-125. Link: https://goo.gl/ahJtMm

26. Howalt JS, Squires JW (1972) Spontaneous rupture of the kidney: A case of a traumatic retroperitoneal bleeding. Am J Surg 123: 484-488. Link: https://goo.gl/CtCQpD

27. Uson AC, Knappenberger ST, Melicow MM (1959) Nontraumatic perirenal haematomas: a report based on 7 cases. J Urol 81: 388. Link: https://goo.gl/TVvv6p

28. Bosniak MA (1989) Spontaneous subcapsular and perirenal haematomas. Radiology 172: 601-612. Link: https://goo.gl/fqA6Wa

29. Gupta NP, Karan SC, Aron M, Pawar R, Ansari M S (2000) Spontaneous perirenal haematoma: A case report and review of literature. Urol Int 64: 213-215. Link: https://goo.gl/vnATVs

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