

**Case Report**

Oral Desmopressin can be used to Treat Prolonged Post-Operative Urine Leakage Caused by a Calyceal Diverticulum Mimicking a Large Renal Cyst: A Case Report

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Introduction

Calyceal diverticulum are rare cystic containing urine cavities in the renal parenchyma, which communicate with the pelvicalyceal system by a narrow neck or infundibulum. The rate of incidence ranges from 0.2% to 4.5% [1-3]. They are benign and in clinical practice difficult to differentiate from simple renal cysts and can be diagnosed with delayed films in contrast CT by filling of contrast into the diverticulum. If the communicating neck is not patent, there will not be any reflux of contrast during CT imaging [2,4,5]. Management of a urine leakage in such cases has different modalities such as catheter drainage, ureteral stenting, and percutaneous nephrostomy placement open repair versus nephrectomy, which is reserved for persistent leakage [6]. Here, we reported a patient with calyceal diverticulum mimicking a simple renal cyst who suffered urine leakage after receiving open renal cyst excision and was successfully treated with oral desmopressin, which has antidiuretic effects and can reduce urinary output.

Case Report

45-year-old women presented to our clinic for a chief complain of 5-year history left flank pain, heaviness and frequent lower urinary tract symptoms. The patient visited multiple general practitioners for the past years and was diagnosed repeatedly as lower UTI for which she has been prescribed oral antibiotics for her condition. Initial bed side ultrasonography performed by the treating urologist revealed presence of a large cyst at the lower pole of left kidney which was confirmed by radiologist consultant ultrasound finding as a large left lower pole cyst. Further CT examination of the abdomen, pelvis enhanced with IV contrast revealed large left lower pole renal cyst measured approx. 10 cm X 9cm also the HU density of the cyst is consistent with clear fluids content (simple renal cyst).



Figure a



Figure b



Figure c

Figure 1. Enhanced CT scan showing a lower pole cyst of the left kidney of approximately 10 mm × 9 mm size. (A, B) Sagittal images, (C) coronal image. CT, computed tomography.

The patient was admitted to our clinic for an elective surgery with the diagnosis of simple left renal cyst and no abnormality was found in laboratory and urine testing. She underwent open left renal cyst excision under general anesthesia after obtaining her consent and agreeing with her family. During the procedure, we discovered that the renal cyst wall was thicker than usual and that there had been a small build-up of fat surrounding the cyst. A little quantity of seepage was carefully noticed in the cyst's base following the excision of the renal cyst wall followed by marsupialization, nevertheless, because of its small volume; it has not received enough attention. A drain was fixed in place.



Figure a



Figure b



Figure c

Figure 2. (a,b). Exploration of the diverticular wall in the lower pole of the left kidney; (c). Excision of the diverticula wall .

In the post-operative period there was persistent urine leakage that was observed immediately after surgery for the first 3 post-operative days within an amount in the range of 200 ml to 250 ml of drainage fluid per day (creatinine of drainage fluid: 786 $\mu\text{mol/l}$). Then, we attempted to place a double-J ureteral stent and indwell a catheter. Simultaneously, a CT examination was performed, which indicated that the double-J ureteral stent was in place. However, the patient's urine leakage did not improve in the following days.

Based on the second CT scan it was agreed that the patient preoperative diagnosis must be calyceal diverticulum. The condition was thought to be treatable with open surgery, but this option has disadvantages, including more difficult surgery due to local adhesions in the surgical area and a high risk of bleeding and collateral damage. The patient decided to accept our present conservative protocol after weighing the advantages and disadvantages.

Oral desmopressin was started at a dose of 0.2mg per day taken at night, she was oriented of the medication side effect, and the drainage decreased to 180 ml in the first day of treatment then decreased to 150 ml 100ml in the second day and third day of treatment consequently. During the patient hospital stay, her vital signs and serum electrolytes were closely monitored and no abnormal findings were observed.

Patient was discharged at the fourth day of treatment, she was taught how to record her daily drainage amount .at her follow up 5 days from her discharge the drainage has stopped, and desmopressin was ended. IVP was carried after 2 days from follow up visit and showed no signs of urinary leakage with normal function of both kidneys. Drain was removed also DJ stent has been removed.



Figure 3. IVP demonstrating no urinary leakage in the intravenous pyelography after oral desmopressin therapy.

Discussion

Desmopressin (1-deamino-8 D-arginine vasopressin, DDAVP) is a synthetic analogy of antidiuretic hormone (L-arginine vasopressin) which was first used in 1977 to treat patients with hemophilia A and von Willebrand disease, the most frequent congenital bleeding disorders [7].

The only FDA-approved nocturia drug is desmopressin, which has two dosage forms: nasal spray and sublingual tablet. Desmopressin is approved to be used as a single agent for the treatment of nocturia due to nocturnal polyuria. The antidiuresis induced by desmopressin is more potent than that of arginine vasopressin, resulting in an increased urine osmolality and decreased urine output by increasing water resorption in the distal and collecting tubules of the kidney [8].

The calyceal diverticulum is easily confused with other pathological conditions on B-ultrasound or nonenhanced CT scans, especially cysts [9]. As is known, an enhanced CT scan can improve the diagnostic accuracy of renal lesions, which is routinely used before renal surgery. However, in the present case, enhanced CT did not effectively detect the calyceal diverticulum. As is known, an excretory image is the crucial phase for diagnosing calyceal diverticula.

In the case report of Cavit Ceylan they reported no decrease in drainage amount after inserting DJ stent however they reported a dramatic decrease in drainage after starting oral desmopressin [10], also Jun-jie Yu case report initial DJ stent insertion was not effective however they managed to remove the drainage tube after 1 week from starting desmopressin [11]. Razzaghi et al.'s study included 7 out of 15 patients receiving nasal desmopressin, and 8 of those individuals were monitored without receiving any medication. The duration of urinary leakage was dramatically reduced in the group treated with desmopressin. Urine leakage was significantly reduced in the group that received desmopressin, according to their observations; this outcome was determined to be statistically significant [12].

In our case, we had a similar condition as Cavit Ceylan that even after we implanted a double J stent; the patient's urine leakage persisted. However, in the following days after starting oral desmopressin medication, the leakage significantly decreased, and no complications were noted. So, we agree with previous reports that Desmopressin can shorten the amount and duration of leakage in such cases.

Conclusion

By weighing, the advantages and disadvantages options for managing prolonged post-operative urine leakage Treatment with desmopressin should be regarded as a safe substitute for treating similar illnesses before they develop into chronic ones, which is a bothersome side effect during the recovery phase. Desmopressin is administered orally, and recent blood tests and serum electrolyte levels showed no complications.

Consent

The patient gave written, informed consent for the publication of this case study and any related photos. The Chief Editor of this journal can review a copy of the consent in writing.

References

1. Waingankar N, Hayek S, Smith AD, Okeke Z. (2014) Calyceal diverticula: a comprehensive review. *Rev Urol*. 16:29–43.
2. Smyth N, Somani B, Rai B, Aboumarzouk OM. (2019) Treatment options for calyceal diverticula. *Curr Urol Rep*. 20:37.
3. Srivastava P, Satturwar S, Bastacky S, Dhir R, Reyes-Mugica M, et al. (2022) Calyceal diverticula: clinical, radiological and histopathological findings of an uncommon entity with presumed congenital origin. *Ann Diagn Pathol*. 58:151932.
4. Peng YH, Zhang W, Gao XF, Sun YH. (2015) Calyceal diverticulum mimicking simple parapelvic cyst: a case report. *Chin Med Sci J*. 30:56–8.
5. Dirim A, Hasirci E, Baskent YCA. (2017) Different treatment approaches after failure of laparoscopic treatment of calyceal diverticulum confused with communicatingtype renal cyst: case report. *Cent European J Urol*. 70:216–17.
6. Meeks JJ, Zhao LC, Navai N, Perry KT, Nadler RB, et al (2008) Risk factors and management of urine leaks after partial nephrectomy. *J Urol*. 180:2375–2378.
7. Brian Castillo, Amitava Dasgupta, Kimberly Klein, Hlaing Tint, Amer Wahed, Chapter 11 - Pharmacologic agents in transfusion medicine, Editor(s): Brian Castillo, Amitava Dasgupta, Kimberly Klein, Hlaing Tint, Amer Wahed, *Transfusion Medicine for Pathologists*, Elsevier, 2018.
8. King C. Lee, Jeffrey P. (2020) Weiss, Chapter 6 - Management and treatment, Editor(s): King C. Lee, Jeffrey P. Weiss, *Nocturia*, Academic Press, 2020: 71-106.
9. Zhang Z, Zhang Y, Wang X, Chen D, Peng N, et al. (2019) Challenges in the diagnosis of calyceal diverticulum: a report of two cases and review of the literature. *J Xray Sci Technol*. 27:1155–67.
10. Ceylan, C, Baytok, Ö., Doğan, S. Yigman M (2012) Prolonged urinary leakage in the postoperative period of renal hydatid cyst treatment with oral desmopressin: a case report. *J Med Case Reports* 6: 339.
11. Yu, J, Yang, A, Du, Y, & Huang, T. (2022). Prolonged postoperative urine leakage due to a calyceal diverticulum mimicking a renal cyst: A case report and literature review. *Frontiers in Surgery*, 9.
12. Razzaghi MR, Rezaei A, Javanmard B, Lotfi B: (2009) Desmopressin as an alternative solution for urinary leakage after ureterocaliceal surgeries. *Urol J*. 6: 120-122.