Case series – Uterine prolapse leading to acute kidney injury

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KEY MESSAGES

- Given that approximately 50% of women are anticipated to encounter POP at some point in their lives, it is important to understand the potential complications (i.e., hydronephrosis, associated kidney damage, and voiding dysfunction).
- The resolution of hydronephrosis and the reversal of associated damage are typically attainable through pessary insertion, with the critical determinant being the timeliness of the intervention.

INTRODUCTION

Population studies suggest 50% of women will develop pelvic organ prolapse (POP) during their lifetime.[1] While many of these are asymptomatic, up to 16% will require surgical intervention for their symptoms.[1] Hydronephrosis has been seen in 12–15% of cases of symptomatic uterovaginal prolapse.[2] In patients with uterovaginal prolapse and hydronephrosis, the rate of renal impairment is around 3%.[3] Women with POP frequently present with increased postvoid residual volume, a risk factor for recurrent urinary tract infections (UTI), and rarely with renal impairment.[2,3] With the rate of POP rising alongside an aging population, it is important to recognize the risk of renal impairment in these women.[1] This case series presents two cases of acute kidney injury (AKI) due to POP and highlights the importance of early recognition and treatment.

CASE REPORTS

Case 1

An 80-year-old G4P4 female with hypothyroidism, hypertension, and long-standing anemia presented to the emergency department in urinary retention with an AKI and a serum creatinine of 320 µmol/L.

Cross-sectional imaging with computed tomography (CT) demonstrated an incidental finding of a small renal mass with no adenopathy or metastases and non-specific thickening of the uterus and posterior bladder wall. There was severe bilateral hydronephroureterosis at the level of the bladder. Bimanual exam revealed a stage IV uterine prolapse.

The patient was taken to the operating room and a cystoscopy was preformed revealing turbid urine and debris in the bladder, along with diverticula and trabeculation, findings that may have resulted from the patient's POP causing bladder outlet obstruction and elevated residuals. After intraoperative manual reduction of the uterine prolapse, the ureteric orifices were able to be visualized, as they were prolapsed as well. Upon visualization of the ureteric orifices, bilateral ureteric stents were inserted.

One week after stent insertion, creatinine continued to trend down to 175 µmol/L. The patient convalesced and her POP was temporized with a pessary while awaiting gynecologic intervention. The pessary also improved her voiding patterns, with no further signs of urinary retention, and postvoid residuals volumes were consistently <100 mL.

Case 2

A 70-year-old female with a history of uterine prolapse underwent an ultrasound to assess for fatty liver disease and was incidentally found to have severe bilateral hydronephrosis. Serum creatinine was 95 µmol/L compared to 67 µmol/L eight months prior, and she was referred to urology for further evaluation.

The patient denied lower urinary tract symptoms or hematuria, however, she did occasionally need to manually reduce her prolapse to initiate flow. She did complain of occasional, mild, bilateral flank discomfort. Uroflow in clinic showed a voided volume of 105 mL, maximum flow rate of 10 mL for one second, and a residual volume of 30 mL.

External pelvic exam revealed a stage IV uterine prolapse with no suprapubic tenderness. Gynecology was consulted urgently, and a pessary was inserted to temporize the prolapse and relieve the ureteric obstruction.

One week after insertion of the pessary, her creatinine improved to 73 µmol/L. Two months later, she underwent a hysterectomy and prolapse repair. Her creatinine after surgery improved toto 66 µmol/L and a followup renal ultrasound one month postoperatively showed no residual hydronephrosis.

DISCUSSION

This case series highlights the potential for symptomatic uterine prolapse to cause ureteric obstructions, which can progress to AKIs, and highlights the need for clinical awareness of this complication. The interdisciplinary nature of this presentation between gynecology and urology makes it important to ensure adequate followup and communication among physicians. With up to half of women experiencing POP during their lifetime, it is important for urologists to be aware of this silent cause of hydronephrosis.[1]

In uterine prolapse, hydronephrosis is typically due to mechanical obstruction of the ureters by the levator muscles in the pelvic floor.[4] Hydronephrosis is seen in approximately 15% of patients with stage IV prolapse.[4] Both surgical intervention and pessary use were shown to reduce hydronephrosis, with the key factor being the time to intervention.[4] Up to 75% of patients treated solely with a pessary had improvement in the degree of hydronephrosis.[4,5] Elderly patients with pre-existing kidney impairments are especially susceptible to long-term consequences due to their diminished kidney reserve.[6]

There are currently no recommendations or guidelines addressing the evaluation of the upper urinary tracts in patients with POP.[7] A retrospective case review looking at patients with uterovaginal prolapse highlighted the importance of considering renal ultrasound and renal function tests on all patients with a stage IV prolapse.[2] This contributed to the decision to expediate surgical repair of the prolapse and reduce the likelihood of irreversible kidney damage.[2] For the urologist, it is important to recognize that POP can be an asymptomatic cause of hydronephrosis and renal dysfunction, and there should be a low threshold to perform a pelvic exam and involve gynecology for pessary insertion once a POP suspected.[7,8]

CONCLUSIONS

In both these presentations, POP was not recognized as a causative factor in the kidney injury until the time of intervention. This case series highlights the importance of close monitoring of patients with severe prolapse while awaiting intervention, as well as the potential for irreversible kidney injury in this population.

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This paper has been peer-reviewed.

REFERENCES

1. Barber MD, Maher C. Epidemiology and outcome assessment of pelvic organ prolapse. *Int Urogynecol J* 2013;24:1783-90. https://doi.org/10.1007/s00192-013-2169-9
2. Wee W, Wong H, Lee L, et al. Incidence of hydronephrosis in severe uterovaginal or vault prolapse. *Singapore Med J* 2013;54:160-2. https://doi.org/10.11622/smedj.2013048
3. Hamid R, Losco G. Pelvic organ prolapse-associated cystitis. *Curr Bladder Dysfunct Rep* 2014;9:175-80. https://doi.org/10.1007/s11884-014-0249-4
4. Leanza VG, Ciotta L, Vecchio R, et al. Hydronephrosis and utero-vaginal prolapse in postmenopausal women: Management and treatment. *G Chir* 2015;36:251-6. https://doi.org/10.11138/gchir/2015.36.6.251
5. Dancz CE, Walker D, Thomas D, et al. Effect of pessary use on hydronephrosis in women with advanced pelvic organ prolapse: A self-selected interventional trial. *Int Urogynecol J* 201728:1589-93. https://doi.org/10.1007/s00192-017-3289-4
6. Lucassen EA, la Chapelle CF, Krouwel E, et al. Renal failure caused by severe pelvic organ prolapse. *BMJ Case Rep* 2019;12:e229318. https://doi.org/10.1136/bcr-2019-229318
7. Siddique M, Ingraham C, Kudish B, et al. Hydronephrosis associated with pelvic organ prolapse: A systematic review. *Female Pelvic Med Reconstr Surg* 2020;26:212-8. https://doi.org/10.1097/SPV.0000000000000683
8. Marquini GV, Martins SB, Oliveira LM, et al. Hydronephrosis associated with pelvic organ prolapse: A review study. *Rev Assoc Med Bras* 2021;67:1061-4. https://doi.org/10.1590/1806-9282.20210434

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