Non-urological cause of bilateral hydroureteronephrosis

Jatin Soni*, Nitesh Jain, Mathisekaran Thangarasu, Sanjay Prakash
Department of Urology, Apollo Main Hospital, Chennai, Tamil Nadu, India
*E-mail: doc_jatin_soni@yahoo.com

ABSTRACT
Bilateral hydroureteronephrosis in a patient with central diabetes insipidus is a rare condition. This rare presentation poses unique diagnostic and therapeutic challenges. Herein, we report a case of diabetes insipidus associated with bilateral hydroureteronephrosis and discuss its clinical and radiographic findings with a special focus on the urological aspects. Dramatic improvement, both clinically and radiologically, was seen after the administration of desmopressin therapy.

INTRODUCTION
Bilateral hydroureteronephrosis due to central diabetes insipidus is a rare condition. Apart from that, a pituitary micro adenoma resulting in such a condition is seldom seen. Only a few cases have been reported so far in the English literature. Herein, we report a case of bilateral hydroureteronephrosis due to central diabetes insipidus resulting from a pituitary microadenoma.

CASE REPORT
A 27 year male presented with complaints of painless, lower abdominal swelling to another centre. The urine routine examination, serum creatinine and the uroflowmetry were normal. Ultrasonography of the abdomen revealed bilateral hydroureteronephrosis with a post void residual urine volume of 1930 ml. The ascending urethrogram was normal and the voiding cystography revealed a large capacity bladder with no evidence of reflux or posterior urethral valves.

On urodynamic assessment, the detrusor pressure (P det) at maximum flow rate (Q max) was 47, bladder outlet obstruction index was within normal limits, and the voided volume was 610 ml along with a post void residual volume of 1320 ml and a total bladder capacity of 1930 ml. Contrast-enhanced computed tomography revealed bilateral hydroureteronephrosis and a large capacity bladder [Figures 1 and 2]. Evaluation by the neurologist including the nerve conduction studies were also within normal limits.

On careful inquiry, he revealed a history of intake of 10 to 12 l of water per day for the past 10 years. The voiding diary suggested a 24 hr fluid intake of more than 20 liters, day time frequency of 16–20 times with the night time frequency of 4–5 times for the past 9 years. On examination, the bladder was palpable up to the umbilicus, the anal tone was normal and the focused neurological evaluation was within the normal limits. The serum sodium value was raised (153 mEq/l), the serum osmolality was raised (313 mosm/kg) and the urinary osmolarity was reduced (77 mosm/l/day). On further evaluation, the serum vasopressin level was reduced (0.2 pg/ml). An magnetic resonance imaging of the brain showed a well-defined heterogeneously enhancing lesion in the poster inferior aspect of the pituitary measuring 7 mm × 6 mm × 6 mm. Scalloping was seen in the posterior aspect of the sella, protruding inferiorly due to the long-standing nature of the lesion. Growth hormone, follicle stimulating hormone, luteinizing hormone, and prolactin levels were within the normal range. A diagnosis of non functional adenoma was made and the patient was advised for desmopressin nasal...
The patient was started on intranasal spray of desmopressin at a dose of 0.2 ml daily in two divided doses, with one puff delivering 0.1 ml of the drug. At 3 months’ follow-up, the patient reported symptomatic improvement and the ultrasound revealed right moderate and left mild hydroureteronephrosis with a Post void residual urine volume of 490 ml. After 3 years of follow-up, the bladder was no longer palpable, the water intake had reduced to 2.5–3 l and the hydroureteronephrosis on ultrasonography had reduced to mild bilaterally. The plasma osmolality and the serum sodium levels had also normalized.

DISCUSSION

Diabetes insipidus (DI) may have multiple clinical presentations depending on the underlying etiology. Younger patients may present with nocturnal enuresis while adults may present with excessive thirst, hypotonic polyuria, and significant hypernatremia. Water deprivation test is considered the gold standard to differentiate between the nephrogenic and central subtypes of DI. We did not perform a water deprivation test because of the fear of precipitating seizures due to hypernatremia and we would have lost valuable time as the diagnosis was certain.

Bilateral hydroureteronephrosis as a presentation of central diabetes insipidus is a rare phenomenon and only five such cases have been reported.[1-5] Patients reported so far were all young, between 12 and 21 years of age, except for one who was 40 years of age. All five had a history of increased water intake and polyuria for many years. Post-void residual urine volume was large in three of the four patients. All five patients responded well to the desmopressin therapy in terms reduced urine output and marked improvement in hydroureteronephrosis. Most of them responded within months of starting the desmopressin therapy.

CONCLUSIONS

Diabetes insipidus is a rare non-urological cause of bilateral hydronephrosis, particularly in young patients and a careful history may help reach the correct diagnosis.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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