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Bilateral Hydronephrosis: A case report

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Cover Page Footnote

The authors would like to acknowledge the child and the mother for being a participant in this study

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Abstract

Hydronephrosis involves the dilatation of the renal pelvis, calyces and ureter. It develops secondary to urinary tract obstruction and leads to a build-up of backpressure in the urinary tract. It can affect unilateral or bilateral kidneys and is caused either by blocking urine flow to the bladder or the urine is leaking backward through the reflux. We report a case of a 9-year-old child inpatient in a paediatric surgical unit. A cystoscopy revealed that the bladder is distended and the bladder wall is thickened. The child was on oral medication and the child had a good prognosis and was discharged from the hospital with follow up advice.

Keywords: Child, Bilateral hydronephrosis, Neurogenic bladder, PUJ obstruction.

Introduction

Hydronephrosis is enlargement, or dilation of the renal pelvis. It happens when the outflow of urine is partially or completely obstructed (Velez-tejada, Ninoserna, Serna-higuita, & Serrano-gayubo, 2014). In this condition, the urine overfills and back up into the kidney which causes the kidney to dilate and appear like a balloon shape when it is filled with water (Chiodini, Ghassemi, Khelif, & Ismaili, 2019). Hydronephrosis commonly affects one kidney, while in some cases, it may involve both the kidneys (Yousefichaijan et al., 2018). The incidence of hydronephrosis is highest among children in the first six years of their life (Singhal, Jain, & Chaudhuri, 2019).

The underlying cause for hydronephrosis includes blockage of the urinary tract, abnormal backflow

of urine from the bladder, abnormal development of kidneys, absence of reflux and genetic cause (Papadopoulos, Abraham, Sergelidis, & Bitchava, 2011). The symptoms among the new-born and infants are usually, pain in the abdomen and presence of blood in urine. Older children are more likely to get urinary tract infections, persistent feeling to urinate, pain in the lower abdomen or back, fever and vomiting (Zhao, Wu, Deng, Lian, & Zhang, 2019). Although this condition is common among children, there is very limited literature available on hydronephrosis among children. Most of the literature is available on antenatal mothers and neonates.

Case report

A 9-year-old male child was brought to a paediatric surgical unit with complaints such as bedwetting since last two years and that he passes urine multiple times in a day. The child was accompanied by his parents in the paediatric surgical unit.

On physical examination, it was found that the child was conscious and oriented to the environment. On abdominal assessment, the child complained of pain. On palpation, his abdomen was tense. No signs of abdominal distension, abdominal mass and peritonitis were observed. No history of urinary tract infection was reported.

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Birth history: The child was born through full-term normal vaginal delivery and the birth weight of the child was 2.7kg. Breastfeeding to the child was started after two hours of delivery. Any complaints after the birth of the child were reported to be none.

Growth and development: The child's growth and development were appropriate to the age. The mother reported that the child attained toilet training at three years of age. No complaint of bedwetting was observed up to seven years of age. **Diet:** The child prefers non-veg food and water intake's 1.5litre per day.

Investigations

Blood investigations highlighted haemoglobin of 12.0 mg/dL, creatinine 2.4mg/dL and urea 82 mg/dL. Ultrasound was done to identify the cause of the problem and it was found that bilateral kidneys were enlarged in size, ureteric dilatation and thinning of cortex parenchyma, distended bladder and thickening of the bladder wall. The child was also diagnosed to have a neurogenic bladder. A 24 hours urine investigation reported the presence of protein in the urine (3+) and blood in the urine (3+).

Medical management

The child was an inpatient in the paediatric surgical unit to rule out the cause of the illness. Initially, catheterization was done to drain the urine out of the kidneys. To identify the condition child was advised for cystoscopy. It is a procedure that examines the bladder lining. From the cystoscopy, it was found that the bladder is distended and the bladder wall is thickened. The child was administered oral medication Tablet Sodamint 2-2-2 to decrease the renal tubular acidosis. The child's condition progressed favourably from the day of admission. The child was regularly monitored for intake and output during the hospital stay. The child's condition was improved and was discharged from the hospital with regular advice of follow-up.

Nursing care

Nursing care focused on appropriate assessment, preparing the child for the procedure, preoperative and postoperative care, pain management, maintaining intake output chart, administering medications and monitoring the child for any complications. The child in the present study showed a better prognosis and was

discharged with further advice of regular follow up to the paediatric surgical unit.

Discussion

Hydronephrosis is commonly identified in the uterus and it affects more in male children compared to female. It occurs in one out of 100 infants and resolves without any treatment (Singhal et al., 2019). In our study, the child was diagnosed with hydronephrosis at the age of nine. The most common cause of hydronephrosis is vesicoureteral reflux (VUR), Ureteropelvic junction obstruction (UPJO), ureterocoele and neurogenic bladder (Papadopoulos et al., 2011).

In the present study, the cause of hydronephrosis was VUR. Treatment of the condition mainly depends on the cause and function of the kidneys (Chiodini et al., 2019). According to a study done by Van Dervoort (2009), it was reported that the symptoms of hydronephrosis are abdominal pain, nausea, vomiting, haematuria and urinary tract infections (Vandervoort et al., 2009). In the present case, the child was normal up to the age of seven years and developed with complaints of bedwetting and an increase in the frequency of passing urine.

Hydronephrosis can be diagnosed in ultrasound, imaging studies, voiding cystograms, CT or MRI (Babu, Venkatachalapathy, & Sai, 2019). If the child is asymptomatic, then a surgical procedure is not required and if the child's condition worsens surgery is the best management. The best surgical procedure is Pyeloplasty (Oliveira, Oliveira, & Mak, 2016). In the present study, the child was diagnosed to have hydronephrosis by ruling out the 24 hours urine collection, ultrasonography and cystoscopy. Management of the hydronephrosis in the study was done by administering oral medications. In some cases, if hydronephrosis left untreated leads to severe and long-term complications (Chiodini et al., 2019).

Conclusion

Hydronephrosis prognosis will be good if early identification and management are made. Children with this condition lead a normal life without facing any consequences. If hydronephrosis is left untreated leads to kidney damage and in most cases, it resolves successfully.

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