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Posterior Urethral Valves in the Pediatric Surgery Unit of the Mali Hospital

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Abstract **Original Research Article**

Posterior urethral valves (UPVs) are congenital obstructive membranous folds that represent the main cause of bilateral renal obstruction and dysuria in children and infants. The seriousness of this malformative uropathy lies in the importance of its impact on the upper urinary tract with a significant risk of end-stage renal failure. The objective of this work is to report our experience on the management of this pathology, for this we carried out a retrospective and descriptive study over a period of 5 years, from January 2018 to December 2022, including all hospitalized patients or seen in consultation at the pediatric surgery unit of Hôpital du Mal. The parameters studied were demographic, clinical, radiological and therapeutic variables. We collected 10 patients, an average of 2 patients per year and a frequency of 0.38%. The infant age group was the most represented, i.e. 80% of cases. The average age of our patients was 9.1 months with extremes of 2 days and 48 months. The most common reason for consultation was dysuria with 60% of cases. Overflow urination was the most frequent functional sign. Fever was present in 90% of cases. Abdominal distension was present in nearly half of our patients and acute urinary retention in 30% of cases. All our patients underwent cytobacteriological examination of urine. It was positive in 4 patients, i.e. 40% of cases. THE. Coli was the majority germ. All our patients performed retrograde urethrocystography (UCR) and objectified a dilation of the posterior urethra in all patients. Surgical treatment concerned all our patients. The FOGARTHY technique was used in 9 patients and a vesicostomy was performed in one patient. In the immediate therapeutic follow-up, 1 patient died in intensive care, 3 patients presented with sepsis, one of whom subsequently died. After an 8-month follow-up, the consequences are simple in all our patients.

Keywords: Posterior urethral valves, retrograde urethrocystography, overflow urination.

INTRODUCTION

The posterior urethral valves (UPV) are congenital obstructive membranous folds that represent the main cause of bilateral renal obstruction and dysuria in children and infants [1]. The seriousness of this malformative uropathy lies in the importance of its impact on the upper urinary tract with a significant risk of end-stage renal failure (25 to 40% of cases), and 1% of children awaiting a renal transplant are carriers of VUP [2].

In Mali, a study carried out on the pathology in 2021 in the pediatric surgery department of the C.H.U. Gabriel Touré had identified 52 cases over 7 years5 () This is a congenital anomaly of the kidney and the excretory tract which forms very early during intrauterine life, hindering the normal development of the kidneys and often being accompanied by lesions renal dysplasia present from the antenatal period which play a major role in the genesis of renal insufficiency. The consequences of this obstruction continue after birth, hence the need to be diagnosed and lifted as soon as possible in order to stop the progression of kidney failure. No study has been carried out on this subject at the hospital in Mali, hence the purpose of our work.

PATIENTS AND METHODS

This is a retrospective and descriptive study over a period of 5 years, from January 2018 to December 2022, including all patients hospitalized or seen in consultation at the pediatric surgery unit of the Mali hospital for the diagnosis of VUP. The parameters studied were demographic, clinical, radiological and therapeutic variables.

RESULTS

During the study period, we treated 10 patients over a period of 5 years, i.e. an average of 2 patients per year out of 2,600 patients seen in consultation or hospitalized, i.e. a frequency of 0.38%. The infant age group was the most represented, i.e. 80% of cases. The average age of our patients was 9.1 months with extremes of 2 days and 48 months. The majority of our patients came from the Koulikoro region, 80%, 50% of our patients were referred. The most common reason for consultation was dysuria with 60% of cases. Consanguinity between parents was found in nearly half of our patients. All our patients had received medical treatment and traditional treatment before admission. In our series, no patient had a history of surgery. Overflow urination was the most frequent functional sign. Fever was present in 90% of cases. Abdominal distention was present in nearly half of our patients and acute urinary retention in 30% of cases. A malformation was associated in 30% of cases, 20% of patients had renal failure with a rate greater than 132 µmol/L. All our patients underwent cytobacteriological examination of urine. It was positive in 4 patients, i.e. 40% of cases. The Coli was the majority germ. Ultrasound was performed in all our patients. Ureterohydronephrosis was the main sign with 60% of cases. All our patients performed retrograde urethrocystography (UCR) and objectified a dilation of the posterior urethra in all patients. Surgical treatment concerned all our patients. The FOGARTHY technique was used in 9 patients and a vesicostomy was performed in one patient. The duration of hospitalization was less than one week in 60% of cases. The average was 10 days with extremes of 1 and 26 days. In the immediate therapeutic follow-up, 1 patient died in intensive care, 3 patients presented with sepsis, one of whom subsequently died. After an 8-month follow-up, the consequences are simple in all our patients.

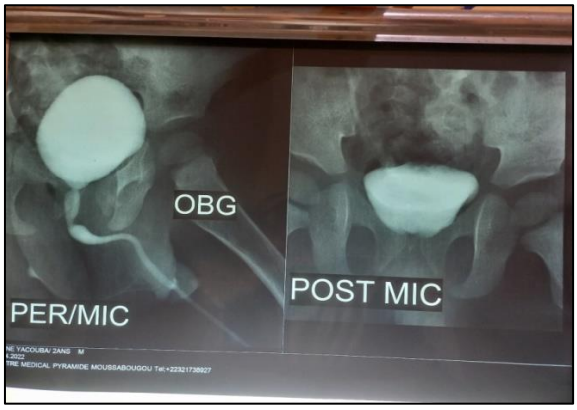

Figure 1: Retrograde urethrocysterography

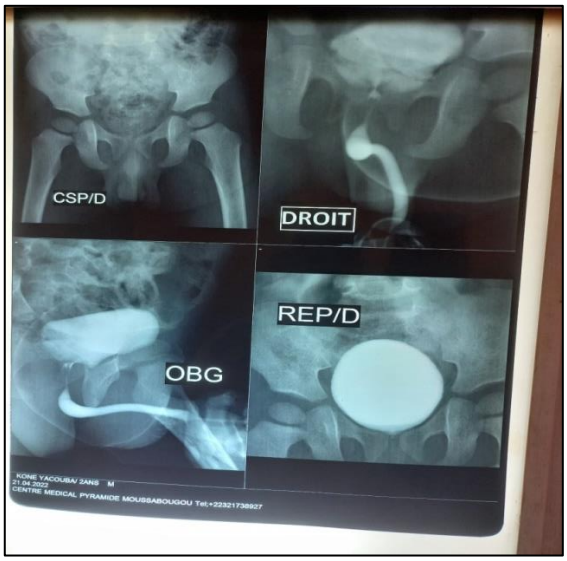

Figure 2: Retrograde urethrocysterography

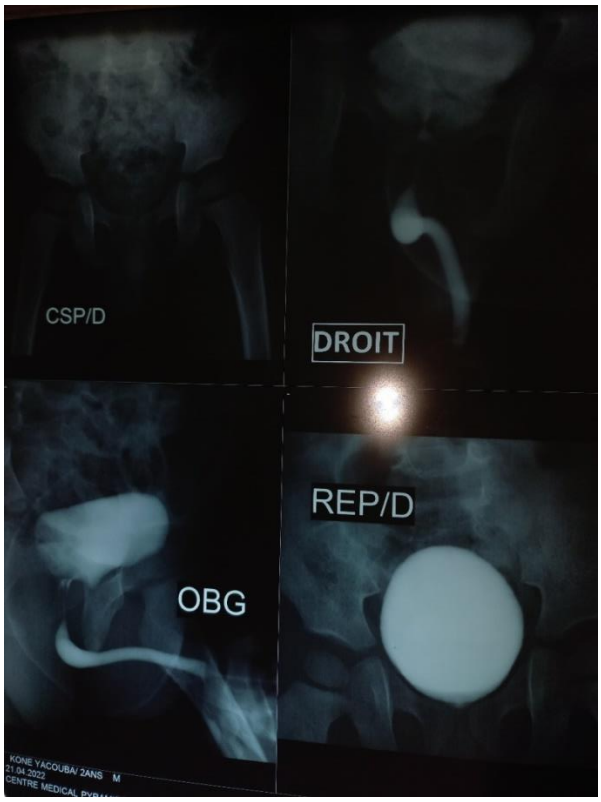

Figure 3: Retrograde urethrocysterography

DISCUSSION

Despite its rarity reported in the literature (1/25,000 live births [3]), VUP is one of the most common causes of low urinary obstruction in boys. In Africa, the majority of studies are isolated series. Our rate of 2 cases per year corroborates with that of Tambo *et al.,* in Cameroon and higher than those reported by TOrumuah AJ [4] and Trellu [5]. This difference could be explained by the fact that our unit was created recently and which is not known by the population for the management of such pathology.

VUP is a congenital condition that manifests at birth or later in infants or children. The diagnosis of this disease is increasingly early thanks to antenatal screening. No antenatal diagnosis was made in our study, unlike those of Mirshemirani A [6] and Uthup S [7] who reported 67.3% and 46.6% respectively. The average age of our patients corresponded to that of the infant. This result is consistent with those of Sagna A [8] and Chakib O [9]. This could be explained by the absence of antenatal screening and the influence of traditional medicine in our context.

Functional signs vary with age. They most often evoke a disorder of urination. We recorded dysuria in 60%. This rate corroborates those reported by the American [10] and Moroccan [11] series. General signs are not uncommon in VUPs, and most often constitute the mode of revelation. Fever represented 90% in our series. This rate is higher than that of Tambo FFM [12] who found 38.9% and could be explained by the small size of our sample. VUPs manifest differently in neonates, infants and children. In period neonatal, abdominal distension, bladder globe and ascites are frequently found. Orumuah AJ [6] in his study noted distention in 40.9% followed by bladder globe with 38.6%. In our series, it was respectively 50% and 20% of cases. In infants and children, it can manifest as an abdominal mass with distention and sometimes failure to thrive. We noted an abdominal mass in 10% of our patients. This rate is comparable to 16.1% in Chakib O's series [9]. VUPs are an embryopathy that can be isolated or integrated within the framework of a poly malformation syndrome. We recorded 30% of associated pathology, Orumuah AJ [4] and Tambo FFM [8] report a respective rate of 6.8% and 44%. Ultrasound is the first-line examination for any suspicion of VUP. It helps to guide the diagnosis and specifies the impact of obstructive uropathy on the upper urinary tract, as well as the bladder wall. [13] All of our patients (100%) realized this. This rate is similar to that of the authors [11, 4, 8]. On the other hand, Warren J [14] and Tambo FFM [12] report a respective rate of 75.5% and 88.9%. This difference could be explained by a lack of antenatal screening in our context.

In our series, it objectified ureterohydronephrosis in 32 patients, i.e. 61.5% of cases. This result is comparable to that of Orumuah AJ [4] or 77.3% and Lbasri B [11] or 100%. The UCR is the reference method to affirm the diagnosis of VUP; it highlights a disparity in caliber between the posterior urethra which is dilated and the anterior urethra. In severe forms, it demonstrates a fighting bladder with an irregular wall sometimes accompanied by VUR. It was performed in all our patients (100%). Orumuah AJ [4] and Lbasri B [11] report a lower completion rate than ours with 79.5% respectively; and 89.4%. This could be explained by the absence of a pediatric cystoscope in our context. She objectified a DUP in 100% in cases. This rate is identical to that of Sagna [8]; and Orumuah AJ [4]. Two of our patients, i.e. 20% of cases, had renal failure on admission. This result corroborates those of the authors [11, 12, 15]. The ECBU is essential for the detection of urinary tract infections, and allows to establish a treatment to protect the kidneys. All of our patients have had this test. It was infected in four patients or 40% of cases, E.Coli was the majority germ Most African studies report a high percentage of urinary tract infection [1, 11, 12, 4] As in our series, E. Coli remains the majority germ in these authors VUP surgery has made considerable progress in recent decades. Several operative techniques are described in the management of VUP From blind methods (Fogarty method, Mohan's valvotome) to endoscopic treatment which is nowadays the reference method. We do not have a pediatric cystoscope. The destruction of the valves by the Fogarty method was the method used in our series in 90% of cases. The success rate was 100%; and was clinically evaluated by the normalization of the

urinary stream as well as the disappearance of the signs of urinary tract infection. Chertin B [16] and Diamond [17] report a respective success rate of 97% and 90% statistically comparable to ours. Postoperative complications are represented by urinary tract infections, urethral stricture, hematuria and urinary extravasation. Shittu OB [18] reported a postoperative urinary tract infection rate of 35% compared to 30% in our series. Overall, the evolution was favorable in 80% of cases after six (6) months of follow-up. Mortality remains significant despite the progress made with a rate of 5%, which is the prerogative of forms with bilateral renal dysplasia [19]. In our series, two patients died, i.e. 10% of cases. This result is comparable to that reported by the authors [12, 6, 14].

CONCLUSION

Posterior urethral valves are one of the most serious congenital obstructive uropathies of the lower urinary tract in boys. They can affect the upper urinary tract, responsible for vesicoureteral reflux and renal failure. His diagnosis is suspected in the face of urinary disorders and confirmed by the UCR. The treatment is surgical. Mortality remains non-negligible.

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