

## CASE REPORT - SUPPLEMENTARY MATERIALS

**Bladder neck disease and kidney damage**

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**INTRODUCTION**

It is a rare disease in women, affecting more frequently young male with a long history of *lower urinary tract symptoms* (LUTS). In men this disease is detected after several years from the symptoms onset.

In literature several forms are described: a primitive form, congenital, with symptoms appearing in pediatrics, often overlooked, and this condition is usually defined around 30 years, earlier than benign prostatic hyperplasia; an inflammatory form; the other forms are secondary to prostate surgery and secondary to sympathetic nervous system dysfunction (neurological form).

The primitive form or PBNO was firstly described in men from *Marion* in 1933 (1). The exact cause of PBNO has not been clearly elucidated, so there are many etiological theories, including muscular and neurological dysfunction and fibrosis. Several Authors, like *Marion*, *Leadbetter* and subsequently *Turner-Warwick*, in 1973, based their theories on the initial structural changes of the bladder neck (2). *Nitti et al.* (3) classified patients with PBNO into three groups:

- 1) classic high pressure, low flow emptying with bladder neck obstruction
- 2) normal pressure, low flow of urine with narrowing of the bladder neck
- 3) delayed the opening of the bladder neck.

**DISCUSSION**

PBNO is a condition in which the bladder neck fails to open properly during urination, resulting in greater activity of the striated sphincter or urinary outflow obstruction, in the absence of anatomical obstruction caused by benign prostatic hypertrophy in men and by a genitourinary prolapse in women.

The present case report focuses on management of patients with LUTS, fairly common condition in young people, that received increasing interest in recent years, considering that every patient with LUTS is unique (5). In particular, in PBNO, the subject often comes late in the observation of the doctor, already complicated by episodes of urinary retention, recurrent urinary tract infections and impaired renal function, because these subjects consider as normal their altered mode of urina-

tion. In addition, they are sometimes treated empirically for years with antibiotics, anticholinergics, alpha-blockers with minimal improvement of symptoms and without a proper diagnostic evaluation. So it remains a severe dysfunction in bladder emptying with long-term consequences if this disorder is not recognized.

Clinically PBNO shows obstructive and/or storage symptoms very similar to prostate disease, with difficulty in initiating urination, decreased force of stream, post-void dribbling, incomplete emptying, urgency, urinary frequency, nicturia, pelvic pain and urinary incontinence especially at night. In some cases it may already initially present with urinary retention (6).

The diagnostic ultrasound, fairly widespread, rapid to use, repeatable and risk-free, represents the first evaluation technique in all kidney diseases and provides, especially in patients with obstruction, useful informations that can direct toward the diagnosis, although they cannot define the etiology (7).

In particular, in our case ultrasound scan was very useful both for morphological renal and bladder evaluation, and for hydronephrosis diagnosis, as well as in long-term follow-up.

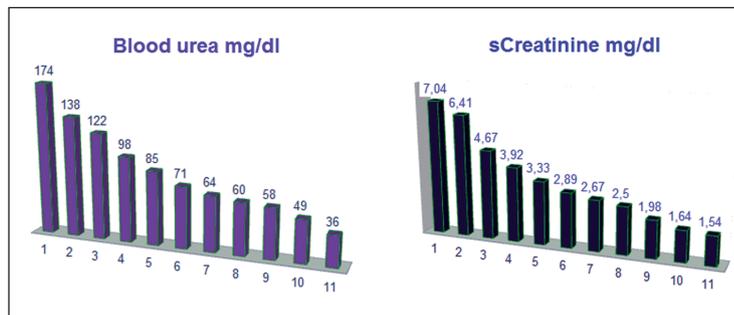
Already in 1973, *Turner-Warwick* considered the urodynamic testing and voiding cystourethrography very useful for a correct diagnosis (8).

Currently, PBNO is diagnosed primarily by videourodynamic and cystourethroscopy (9), although *Melo et al.* suggest the use of magnetic resonance, introducing new imaging findings (10).

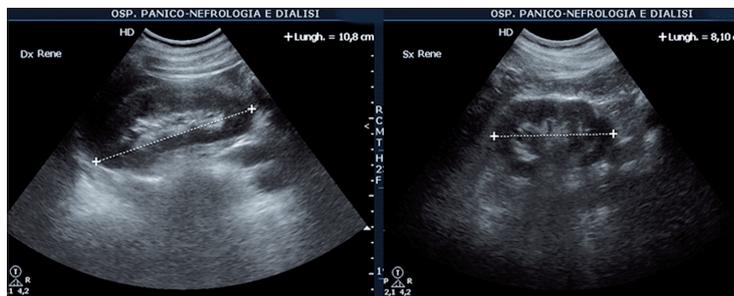
The urodynamic examination is of paramount importance, even better if associated with phase fluoroscopy (videourodynamic) because it shows functionally voiding phase in the presence of high intravesical pressure values with low urinary flow and radiologically the failure or reduced opening of the bladder neck and urethra thin with low urinary flow. According to *Nitti et al.* (3) PBNO classification, the urethroscopy finds its indication in cases of diagnostic doubt.

A review of the literature provides some reasonable guidelines for PBNO treatment in men, even in the absence of randomized controlled trials. Data in women are very scarce.

**Figure 3.**  
Indices of renal function gradually improved during hospitalization.



**Figure 4.**  
Follow-up after one year: Right kidney of normal size (LD 108 mm), Left kidney of small size (LD 81 mm), cortico-medullary thickness reduced, II-III degree hydronephrosis.



The treatment is the same in man and woman and goes by careful clinical observation in cases where the symptomatology is not striking, to medical therapy with alpha-blockers, which are still today the hinge, or surgical depending on the severity of the symptoms, urodynamic results and therapy response.

Several studies have reported the safety, tolerability and efficacy profile of medical therapy with alpha-blockers in patients with dysfunction of the bladder neck in assessing short and long term both in young man and woman (11-13).

The surgical treatment is the endoscopic trans-urethral resection of the bladder neck (14).

Usually it is performed with two deep cuts starting below the ureteral obstruct up to affect the neck at 5 and 7 o'clock. This allows the bladder neck to stay open and then to reduce the resistances cervico-urethral during urination. The main concern after incision of the bladder neck is the development of a total or partial retrograde ejaculation.

### CONCLUSIONS

The present case report shows, on one hand, the importance of a careful history of urinary dynamic, both in young and in adult individuals, in order to early detection

of urinary disorders, the development of which can be a source of permanent renal damage also, and in the other hand it emphasizes the essentiality of diagnostic imaging (ultrasound study complete urinary tract, especially in patients with obstruction, retrograde and voiding cystourethrography, urethroscopy, uroflowmetry, renal sequential scintigraphy) for accurate diagnosis and for follow-up long-term.

There is still much to learn about the natural history and etiology of this disease, also in view of the relatively low prevalence.

More information is needed regarding the treatment compared to the progression of the symptoms and the risk of developing episodes of acute retention of urine, urinary tract infections and, consequently, impaired renal function since the treatment of patients with PBNO is not only the reduction of urinary disorders, although severe, but the prevention of progression of renal damage.

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