Causes, characteristics and mid-term course of acute urinary retention in women referred to a urodynamics unit

G. García-Fadrique*, G. Morales, S. Arlandis, M.A. Bonillo, J.F. Jiménez-Cruz

Servicio de Urología, Hospital Universitario y Politécnico La Fe, Valencia, Spain

Received 10 March 2011; accepted 11 March 2011
Available online 20 October 2011

KEYWORDS
Female gender; Urinary retention; Acute disease; Urodynamics

Abstract
Objectives: Acute urinary retention (AUR) is uncommon in women and can be related to different conditions. Only some patients are referred to the urodynamics units for a more extensive study. We intend to describe the characteristics and causes of AUR in women referred to our unit and to analyze their middle term evolution.

Material and methods: We performed a descriptive retrospective study (January 1982–December 2006), including the women referred to our Uro-Neurology and Urodynamics Unit after suffering an AUR. Medical charts were reviewed with special emphasis on medical history, physical examination, and also complete urodynamics study during the AUR event and after its resolution.

Results: A total of 202 women were included, median age of 57 years (12–87 years). Prior to the AUR, 59 women (28.7%) reported voiding symptoms. The urodynamics findings were: 65 (32.2%) detrusor hypocontractility; 64 (31.7%) normal study; 37 (18.3%) detrusor acontractility; 21 (10.4%) bladder outlet obstruction; 15 (7.4%) poor pelvic floor relaxation. The causes of the AUR were: 53 neurological (26.2%); 46 unknown (22.8%); 19 gynecological (9.4%); 22 diabetes mellitus (10.9%); 16 urological (7.9%). Renal insufficiency was observed in 14 patients (6.9%). After the AUR 106 women (52.4%) needed some kind of prolonged treatment.

Conclusions: In our experience, AUR in the female is mainly related to underlying neurologic/urogynecologic disease, even though the etiology could not be known in a significant percentage of patients. Half of the patients recovered completely and did not require any treatment.

© 2011 AEU. Published by Elsevier España, S.L. All rights reserved.

* Corresponding author.
E-mail address: gonzag1@hotmail.com (G. García-Fadrique).
Introduction

Acute urinary retention (AUR) is the sudden inability to empty the bladder content. It is an uncommon entity in women, whose incidence is estimated at 0.07 per 1000 inhabitants each year. It may relate to different disorders. Unlike what happens in men, the AUR in women is not usually due to obstructive processes. In men, benign prostatic hypertrophy plays an essential role. In women, it often appears in the context of a gynecological or neurological disease. Pharmacological or surgical iatrogenesis is also common. In a considerable percentage of cases the cause cannot be identified, and given that additional examinations are normal, a psychogenic component is suspected.

Not all the women who suffer an episode of AUR are referred to urology, as in most cases it is a specific episode without repercussions. However, in some women, neurological or urogynecological disorders that require further study, close monitoring, or the establishment of a treatment are detected. The aim of this work focuses on describing the causes of AUR in women referred to a specific unit of functional disorders and analyzing the medium-term evolution of these.

Materials and methods

We performed a retrospective descriptive study including all the women who were referred to our Neurourology and Urodynamics Unit after suffering an AUR between January 1989 and December 2006.

We reviewed the medical records of the patients, including personal history, concomitant medication, general physical examination, neurological and urogynecological examination and medium-term development. We performed a urine culture and a complete urodynamic study during the AUR episode once it was overcome. The study included, in all the cases, free flowmetry, filling cystometry and pressure-flow study. Sometimes other additional tests such as electromyography, evoked potentials or magnetic resonance imaging were necessary.

Results

The studied patients were 202, with a median age of 57 years (range 12–87 years). Prior to the episode of AUR, 58 patients (28.7%) had voiding symptoms, consisting of difficulty in starting urination, weak and intermittent stream, voiding difficulty or feeling of incomplete emptying.

Regarding the digestive history in 44 patients (21.8%), there was history of chronic constipation, 82 patients (40.6%) had normal intestinal rhythm and two (1%) irritable bowel syndrome. In 74 patients (36.6%) information on this aspect was not available. Table 1 shows the urodynamic patterns. The most common finding was bladder acontractility (65 patients, 32.2%), followed by normal study (64 patients, 31.7%), and acontractility (37 patients, 18.3%).

The causes of the AUR were divided into 9 categories, whose respective percentages are shown in Table 2. The most frequent cause was unknown (46 cases, 23%). This group includes women with no comorbidity and no apparent
cause of voiding dysfunction, but with pathological urodynamic study.

The following etiological group, in order of frequency, is made of neurological causes (53 patients, 26%). Among these, 11 infections in the nervous system, 9 spinal tumors, 5 multiple sclerosis, 16 vasculo-medullary injuries, two strokes, two slipped disks, 4 iatrogenic neuropathies after spinal manipulation or spinal anesthesia, an Alzheimer’s disease, two rachischisis, and one hydrocephalus were detected. Diabetes mellitus is the next causal group (22 cases, 11%), followed in turn by psychogenic cause (21 cases, 10%) in women without comorbidity and with normal urodynamic study.

The gynecological cause (19 cases, 9%) was very varied: 8 neurological injuries after abnormal labor, hysterecomy or pelvic radiotherapy; 11 infravesical obstructions (4 cystocele, an ovarian tumor, a uterine fibroid, two lower lip symechnaei, a hematocolpos, a descended pregnant uterus, and two patients with a history of colporrhaphy). The urological causes (16 cases, 8%) revealed: three urethral stenoses, three retentions after the placement of a suburethral mesh, 6 urinary tract infections, a urethral diverticulum, an acute nephritic renal colic, a urethral caruncle, and a history of cystoplasty.

Other less frequent causes were: immediate postoperative period after hip prosthesis placement (12 cases, 6%), pharmacological cause (tricyclic antidepressants, opioids, and antimuscarinics) (10 cases, 5%) and digestive cause (three cases, 2%) (one fecaloma and two retentions after abdominoperineal rectal amputation). From the point of view of the after-effects, only 14 women (6.9%) developed acute renal failure with creatinine levels above 1.4 mg/dl. All of them achieved normal renal function once the treatment was established.

After the episode of AUR, with a median follow-up of 28 months (range 3–217 months), 96 patients (47.6%) remained asymptomatic and therefore did not require any treatment. However, 106 women (52.4%) continued having some type of voiding dysfunction, and needed treatment: most of these patients received an alpha-blocker (47 women, 44.3%); 45 women (42.4%) started a regime of self-catheterization; 10 patients (9.4%) required an indwelling catheter, and 4 women (3.9%) surgery consisting of internal urethrotomy, transurethral resection of cervix or periodic dilations.

### Table 1
Percentage of patterns reflected in the urodynamic study.

<table>
<thead>
<tr>
<th>Urodynamic pattern</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bladder hypocontractility</td>
<td>65 (32.2%)</td>
</tr>
<tr>
<td>Normal</td>
<td>64 (31.7%)</td>
</tr>
<tr>
<td>Bladder acontractility</td>
<td>37 (18.3%)</td>
</tr>
<tr>
<td>Intravesical obstruction</td>
<td>21 (10.4%)</td>
</tr>
<tr>
<td>Absence of relaxation of the pelvic floor</td>
<td>15 (7.4%)</td>
</tr>
</tbody>
</table>

### Table 2
Percentage of identified causal groups.

<table>
<thead>
<tr>
<th>Etiologic groups</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurological causes</td>
<td>53 (26%)</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>22 (11%)</td>
</tr>
<tr>
<td>Gynecological causes</td>
<td>19 (9%)</td>
</tr>
<tr>
<td>Urological causes</td>
<td>16 (8%)</td>
</tr>
<tr>
<td>Immediate postoperative</td>
<td>12 (6%)</td>
</tr>
<tr>
<td>Pharmacological causes</td>
<td>10 (5%)</td>
</tr>
<tr>
<td>Digestive causes</td>
<td>3 (2%)</td>
</tr>
<tr>
<td>Psychogenic cause</td>
<td>21 (10%)</td>
</tr>
<tr>
<td>Unknown cause</td>
<td>46 (23%)</td>
</tr>
</tbody>
</table>

### Discussion

One of the discrepancies between the AUR observed in women and that presented by men is that in men it is usually preceded by a symptomatology of months or years of evolution. Benign prostatic hypertrophy is by far the leading cause of AUR in men, and it usually reflects the abandonment of a bladder that has been struggling to overcome the flow obstruction for a long time. In contrast, the AUR in women is not usually associated with infravesical obstruction and is not preceded by any symptomatology. Nevertheless, we must not forget that in many cases, especially in the elderly, women develop symptoms of chronic urine retention with a minimum of symptomatology presented.

A detailed history is crucial in determining the etiology of the AUR. In the same way that the patients are asked about the urinary symptomatology of filling and emptying, they should be asked about their digestive habits, because many times they report an altered intestinal rhythm. Being a retrospective study based on the review of medical records, we could not get information about this aspect in all the cases. However, in our series, there is a significant number of patients who met chronic constipation criteria or who suffered from irritable bowel syndrome.

Nowadays, ultrasound remains of great value in the study of voiding disorders. The test is inexpensive, simple, and available in almost all centers; and it provides information on the bladder, the bladder cervix and pelvic organs. The urodynamic study is essential to perform a correct diagnosis of these patients and to choose the most beneficial treatment. The urodynamic pattern most frequently found in both our series and in previous publications is the bladder hypocontractility. This is defined by the existence of contractions of reduced strength and/or duration, which entails a sustained voiding and/or failure to achieve complete emptying in a normal time. In some series, in fact, up to 50% of urodynamic studies showed bladder hypocontractility. This coincides with the fact that the majority of the women who suffer an AUR there exists a neurological disorder. The infravesical obstruction, however, is rare. With a 10.4%, our values are close to those previously published by Klarskov et al. (11.1%). This type of patients constitutes the group with better prognosis, since most cases are solved successfully by surgery.

With regard to the causes, the neurological one is the most common in most series. This leaves behind the classical belief that most of the retentions in women are of a psychogenic nature, this etiology being relegated to children and patients with psychiatric comorbidity, mainly depression and anxiety syndrome. Fowler et al. observed that 72% of the patients with AUR showed an alteration in the behavior of the external sphincter...
detected by electromyography during the voiding phase.\textsuperscript{15,16} So, it was shown that some cases previously labeled as psychogenic had an objectifiable functional component.

With regard to infravesical obstruction as a cause of AUR, it is important to highlight the involvement of the pelvic organs\textsuperscript{4} and complication after surgery for incontinence.\textsuperscript{17} The AUR after surgery for incontinence usually occurs within 24 h.\textsuperscript{18} If, however, it takes place later, the prognosis is usually worse and it usually requires urethrolysis.\textsuperscript{19} The anti-incontinence techniques through transobturator are faster and with fewer complications in terms of voiding dysfunction. This problem occurs in 3–32% after colposuspension\textsuperscript{20} and only in 3–15% after TVT.\textsuperscript{21} Some rare causes of infravesical obstruction have been described, such as imperforate hymen,\textsuperscript{22} paraurethral leiomyoma or retroverted gravid uterus.\textsuperscript{23} The genital herpes virus can affect pelvic nerves causing not only AUR but also neurogenic pain in the sacral area.\textsuperscript{24}

There is often a history of gynecological surgery in patients suffering from AUR. Uccella et al. compared open and laparoscopic hysterectomy in patients with cervical cancer and observed a similar complication rate, with AUR in 14% of the laparoscopic and in 14.6% of the open (\(p = 0.11\)) hysterectomies.\textsuperscript{25} Gimbel et al. compared the total and subtotal hysterectomy in relation to lower urinary tract symptoms, finding less incontinence and urgency in the total ones, but no difference in emptying or the development of AUR.\textsuperscript{26} The physiopathological mechanism by which AUR occurs after pelvic surgery is not exactly known. Some of the hypotheses are pelvic nerve or bladder damage, edema around the bladder neck or sphincter contraction, reflecting perineal pain.\textsuperscript{27} AUR is the most common complication after benign anorectal surgery.\textsuperscript{28}

This work has a considerable selection slant, since only women who have been valued at a specific unit have been included. This explains why spinal vascular lesions, despite their low incidence in the general population, are presented as the main cause of AUR.

Regarding the impact on the upper urinary tract, the determining factor is the time the patient takes to see a doctor. Few women delay the consultation as if to develop acute renal failure. In general, once the urine is derived, the renal function is recovered. In our series, 52.4% of the patients required medium-term treatment (alpha blockers, permanent catheterization, intermittent catheterization or surgery) due to the persistence of some degree of voiding dysfunction. In the same way that intermittent catheterization was used mainly in the AUR associated with neurological processes, surgery was helpful in women with urethral lesions or with a history of urogynecological surgery. The most accepted treatment in AURs developed in the immediate postoperative period is intermittent catheterization.\textsuperscript{29} Neurmodulation meant an improvement in many patients, in some cases replacing the intermittent self-catheterization.\textsuperscript{29} Other therapies, such as sphincter injection of botulinum toxin, are still under study.\textsuperscript{30}

Benign prostate growth and voiding disorders in men have been widely studied, but more research about the mechanism by which AUR develops in women is needed. In our series, focusing on the work of a Urodynamics Unit of a tertiary hospital, the AUR in women is usually caused by an underlying neurological or urogynecological disease, although in a significant percentage of patients the cause was not identified. Half of the patients recovered completely and did not require any treatment.

Conflict of interest

The authors have no conflicts of interest to declare.

References