



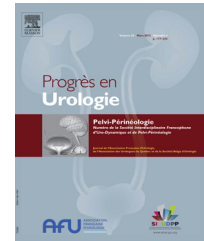
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ORIGINAL ARTICLE

Emptying cystometry: A feasibility and validation pilot study on female patients

Cystomanométrie de vidange : une étude pilote de faisabilité et de validation dans une population féminine

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KEYWORDS

Urodynamics;
Urinary bladder;
Overactive;
Botulinum toxins;
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Summary

Introduction. – To assess the feasibility and the accuracy of emptying cystometry in order to simplify the manometric follow-up of overactive detrusor in neurological patients under anticholinergic or botulinum toxin injections.

Material. – Female patients with a stable detrusor underwent both a conventional cystometry and sequential measurements of bladder pressure during emptying (emptying cystometry). At the end of the standard cystometry, a CH12 urinary catheter was introduced in the bladder and was connected to a three-way stopcock. The second way of the stopcock permitted the emptying. The third way of the stopcock was connected to a vertical graduated tube to measure the bladder pressure each 50 mL during the bladder emptying.

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Results Eleven female patients were included (mean age: 59.4 years). Nine patients (82%) had neurogenic bladder. Mean cystometric capacity was 439 mL (SD: 35 mL). During the emptying cystometry, 8 to 10 measures were taken (mean: 9.4). The mean detrusor pressure was 1.7 cmH₂O (SD 2.1) for the filling cystometry and 2.3 cmH₂O (SD: 2.7) for the emptying cystometry. The agreement between the detrusor pressure between the two cystometries was good with intra-class correlation coefficient at 0.66 [0.48–0.77] – and the correlation was high ($r=0.7$; $P<0.000001$).

Conclusion. – In a small, selected sample of patients, emptying cystometry provides similar results of detrusor pressure to filling cystometry. This technique could constitute a home monitoring of bladder pressures in a selected population of patients with intermittent catheterization in whom a manometric follow-up of detrusor overactivity is required.

Level of evidence. – 4.

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MOTS CLÉS

Urodynamique ;
Hyperactivité
détrusorienne ;
Toxine botulinique ;
Anticholinergiques

Résumé

Introduction. – L'objectif de cette étude est d'évaluer la faisabilité et la validité d'une cystomanométrie de vidange afin de simplifier le suivi manométrique des patients neurologiques avec un détroeur hyperactif et traités par anticholinergiques ou injections de toxine botulinique.

Matériel. – Les patientes ayant un détroeur stable ont bénéficié d'une cystomanométrie conventionnelle et de mesures séquentielles de la pression vésicale au cours de la vidange (cystomanométrie de vidange). À la fin de la cystomanométrie standard, une sonde urinaire de CH 12 connectée à un robinet à trois voies, était introduite dans la vessie. La deuxième voie du robinet était connectée à un tube gradué vertical mesurant la pression vésicale tous les 50 mL vidangés.

Résultats. – Onze patientes d'âge moyen 59,4 ans ont été incluses, neuf (82 %) avaient une vessie neurologique. La capacité cystomanométrique moyenne était de 439 mL (SD : 35 mL). Au cours de la cystomanométrie de vidange, 8 à 10 mesures ont été relevées (moyenne : 9,4). La pression détroeurienne moyenne était de 1,7 cmH₂O (SD : 2,1) pour la cystomanométrie conventionnelle et de 2,3 cmH₂O (SD : 2,7) pour la cystomanométrie de vidange. L'accord entre les pressions détroeuriennes au cours des deux cystomanométries était fort avec un coefficient de corrélation intra-classe à 0,66 [0,48–0,77] ainsi que leur corrélation ($r=0,7$; $p<0,000001$).

Conclusion. – Dans un petit échantillon de patients, la cystomanométrie de vidange permet une mesure de pression détroeurienne similaire à la cystomanométrie de remplissage, ce qui pourrait constituer un moyen de contrôle des pressions endovésicales à domicile chez des patients sous autosondages nécessitant un suivi manométrique régulier.

Niveau de preuve. – 4.

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Introduction

Bladder pressure assessment is necessary for the diagnosis, the prognostic assessment and the management of neurogenic bladder [1,2]. High bladder pressures increase the rate of urological complications and mortality in patients with neurogenic bladder and thus many treatments are proposed in order to improve bladder compliance and reduce uninhibited detrusor contractions (anticholinergic drugs, botulinum toxin injections, cystoplasty, sacral neuromodulation, beta-3-agonist, posterior tibial nerve stimulation) [3].

Clinical data, symptoms scales, quality of life questionnaires, renal ultrasound, biological tests of renal function and urodynamics are used to control the treatment efficacy

of neurogenic lower urinary tract dysfunction [4]. Filling cystometry is the usual way to record bladder pressure. Urodynamic techniques using external pressure transducers connected to the patient with fluid-filled lines are recommended [1]. This multichannel cystometry is performed in a specialized department with the inconvenience of delays for appointments and cost of the urodynamic assessment. Moreover, only some parameters are important and taken into account in the follow-up of these neurogenic bladders: bladder capacity, bladder compliance and maximum detrusor pressure at the end of the filling phase. All these parameters can be recorded by means of a self-assessment of bladder pressure at home with a very simple device made of (1) a intermittent catheter; (2) a three-way stopcock; (3) a

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