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VOIDING CHART DATA TO STUDY LOWER URINARY TRACT FUNCTION NON-INVASIVELY: CRITICAL REVIEW OF THE PARAMETER "VOIDING FREQUENCY"

Hypothesis / aims of study

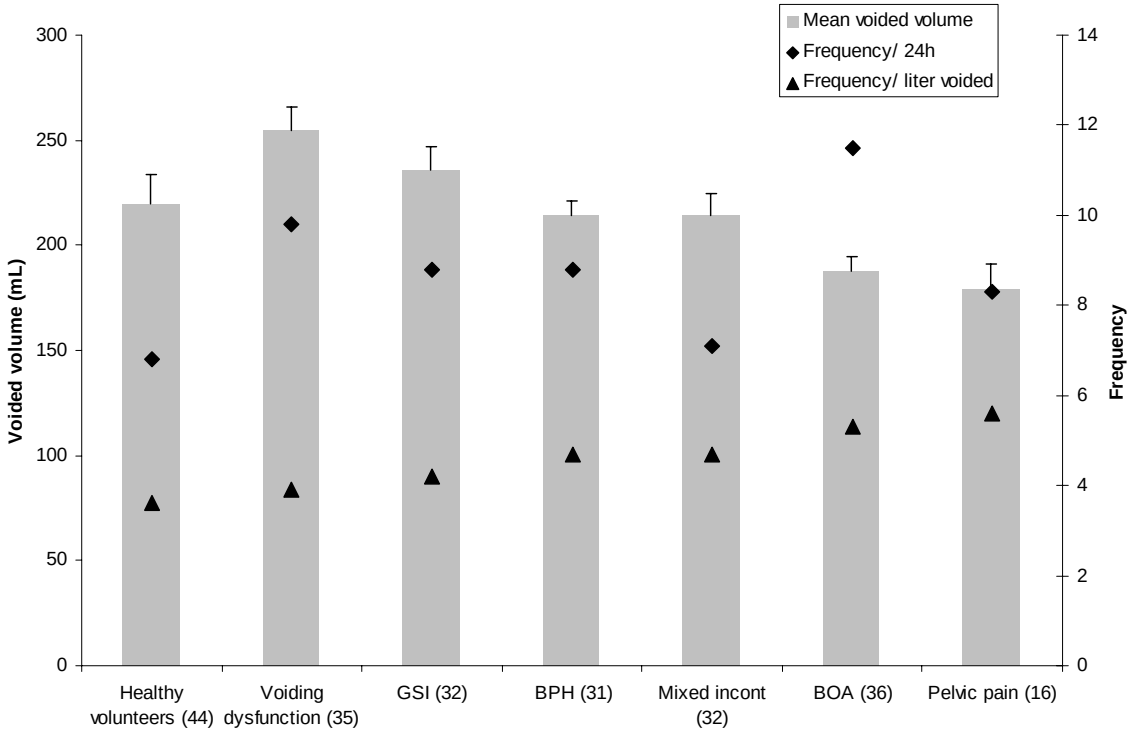
Voiding charts are currently used to evaluate bladder behaviour during daily life activities. However little data is available as to what extent these charts can be used to study lower urinary tract (LUT) function non-invasively. Voiding frequency as parameter has obtained a lot of interest because an increased frequency is considered one of the most bothersome LUT symptoms, found in patients with irritable storage problems (1). This parameter is therefore often used in studies to evaluate the efficiency of drug treatment. In this study the value of voiding frequency as parameter to study LUT storage function is critically evaluated.

Study design, materials and methods

A 3-day voiding chart was filled out by 182 patients with different LUT dysfunctions and 44 healthy volunteers. Patient groups were identified based upon symptoms and cystometric data: patients with voiding dysfunction without storage symptoms (n = 35), women with genuine stress incontinence (n = 32), men with benign prostate hyperplasia with irritable symptoms (n = 31), women with mixed incontinence (n = 32), patients with overactive bladder syndrome (n = 36) and patients with pelvic pain (n = 16). Parameters derived from the voiding charts and studied here were mean voided volume (mL), voiding frequency per 24 hours and voiding frequency per litre voided.

Results

The data are shown in the graph grouped for the different LUT dysfunctions with the number of participants included in each group. Data from the healthy volunteers are shown on the left. Patient groups are classified according to the expected presence of irritable storage symptoms, based on the symptoms and the mean voided volume measured on the voiding charts.



Frequency per 24 hours did not correlate with the presence of irritable symptoms or mean voided volume. This is illustrated by the scattering of frequency per 24 hours across the different patient groups. However frequency per litre voided increased towards the groups with irritable storage symptoms. As an example of the low correlation between frequency per 24 hours and LUT storage function, note the high frequency per 24 hours in patients with voiding dysfunction, without storage symptoms.

Interpretation of results

Voiding frequency / 24 hours is frequently determined on voiding charts because an increased frequency is considered a bothersome LUT symptom. This study clearly shows that voiding frequency / 24 hours does not always reflect LUT storage function, because it is highly dependent on fluid intake and therefore also on total voided volume. This statement is clearly illustrated in the group with voiding dysfunction without any storage symptoms, which has the second highest frequency / 24 hours. Our data clearly shows that frequency per liter voided is a more reliable parameter for LUT storage function, because it excludes bias from fluid intake and truly reflects presence of irritable storage symptoms. Therefore this parameter provides more correctly informs on LUT function in daily life. To objectively evaluate changes in LUT function after drug treatment, this parameter should be included in future studies on voiding charts.

Concluding message

Although voiding / 24 hours may provide information on the burden of increased frequency, it does not reflect LUT function. To evaluate LUT function non-invasively on voiding charts, frequency per litre voided volume should be used.

Urinary symptoms in the community: how bothersome are they? Br J Urol. 74:551-555,1994.