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THE ASSOCIATION BETWEEN OVERACTIVE BLADDER AND FALLS IN OLDER WOMEN: A PROPOSED EXPLANATION.

Hypothesis / aims of study

Falls in older adults are prevalent, with severe consequences for many including physical injury, loss of confidence and increasing dependency. They are costly to health and well-being and are increasingly common with demographic ageing. Multiple risk factors for falls have been identified including an association between urgency incontinence and increased risk of falls. However explanatory mechanisms for this observed link have yet to be established. One hypothesis is that an urgent desire to void has an effect on balance and gait in older people, potentially increasing their risk of falling.
To investigate the effects of an urgent desire to void on gait parameters in older women with and without overactive bladder.

Study design, materials and methods

An observational study of gait in different bladder conditions was undertaken in groups of adult women. Three groups of women were recruited (n= 51): young women (age under 48) with no urinary symptoms (n = 17), older women (60 and over) with no urinary symptoms (n = 17) and older women (60 and over) with urinary urgency (n = 17). Urinary symptom status was determined using the American Urological Association Symptom Index (AUASI) [2]. Each woman attended the gait laboratory on one occasion. Analysis of the women's gait was undertaken using a computerised gait analysis system (GAITRite™). Initial gait analysis was undertaken with an empty bladder. Subsequently fluids of choice (non-alcoholic) were provided and a further gait analysis recorded when the woman experienced a first desire to void (FDV). At this time the woman was asked to defer voiding until a strong desire to void (SDV) was experienced, at which point further gait analysis was completed. A range of spatial and temporal gait parameters were recorded and the gait variability (coefficient of variation) calculated for each parameter at each of the three time points.

Results

The mean age (SD) of the women was: younger women 39.1 (6.8) years, older healthy women 73.5 (9.6) years, older women with urgency 74.1(9.5) years and the median AUASI symptom scores (range) were: younger women 2 (0-6), older healthy women 4 (0-7), older women with urgency 14 (10-25). Similar changes in gait were found for the three bladder conditions in all three groups of women. A pattern of reduced velocity was observed between the first desire to void and the strong desire to void. This was more pronounced in the older women with urgency symptoms. A pattern of reduced stride length was observed between the first desire to void and the strong desire to void. This was more pronounced in the older women with urgency symptoms (table 1). Increased variability in the gait pattern was found in younger women and in older women with urinary urgency compared to those without at strong desire to void. This pattern was consistent across all gait parameters measured (Figure 1).

Interpretation of results

A consistent pattern of reduced velocity, decreased stride length and increased cycle time variability was found in all 3 groups of women when they experienced a strong desire to void. Increased gait variability is associated with increased falls risk. It is suggested that younger, healthy women have a low risk of falling with bladder-associated gait changes, as they have the capability to adapt their gait safely to meet the demands made by their bladder condition. Older women with no bladder symptoms adjust their gait speed and stride length to reduce variability, in order to maintain stability and safety when they experience a strong desire to void. Older women with bladder pathology (OAB) reduce their gait speed and stride length however their gait variability is increased, reducing their walking stability overall and increasing their risk of falls.

	Condition			**Post hoc tests**		
	Empty	FDV	SDV	Emp v FDV	Emp v SDV	FDV v SDV
Variable	Young					
Stride Length (R) (cm)	145.3 (10.54)	145.9 (10.14)	137.1 (14.06)	0.9562	0.0013	0.0006
Stride Length (L) (cm)	145.5 (10.48)	146.5 (10.43)	136.8 (14.11)	0.8871	0.0009	0.0002
	Over 60s					
Stride Length (R) (cm)	124.7 (18.70)	122.7 (20.21)	120.1 (17.0)	0.2496	0.0024	0.1145
Stride Length (L) (cm)	124.5 (19.1)	123.0 (20.4)	120.1 (16.5)	0.4859	0.0069	0.1016
	Over 60s with urgency					

Stride Length (R) (cm)	112.4 (16.13)	109.5 (16.2)	107.7 (16.9)	0.3215	0.0000	0.0001
Stride Length (L) (cm)	112.3 (16.28)	109.3 (16.0)	107.7 (16.8)	0.4991	0.0000	0.0001

Table 1 – Stride length (cm) in each group at three bladder conditions

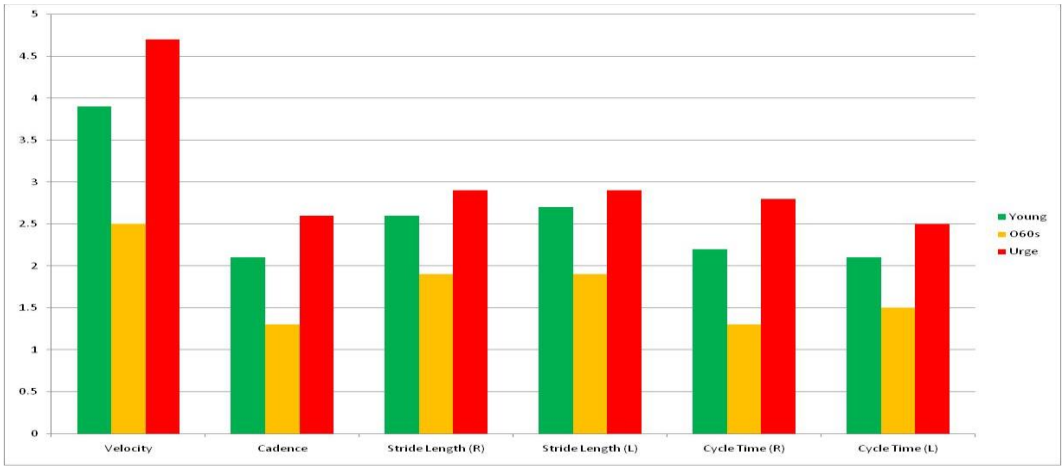

Figure 1 Gait variability (CoV) at strong desire to void.

Concluding message

The slower speed of walking, shorter steps and increased variability observed in this study showed that a strong desire to void affects the pattern and rhythmicity of walking and suggests there is a relationship between higher centre control of bladder function and control of gait. This may partly explain the increased risk of falling associated with urinary incontinence and overactive bladder syndrome.

Disclosures

Funding: Glasgow Caledonian University internal funding **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** West of Scotland Research Ethics Service **Helsinki:** Yes **Informed Consent:** Yes