

RELATIONSHIP BETWEEN PHYSICAL CAPABILITY AND URINARY INCONTINENCE IN 1942 WOMEN OF 75-85 YEARS

Hypothesis / aims of study

Urinary incontinence (UI) is a common pathology in women, its prevalence increases with age. The main hypothesis advanced to explain UI in aged women is neuromuscular aging concerning urethral sphincter, pelvic floor or higher functions. There is an association between functional limitation and UI, but the meaning of this association remains uncertain. We can assume that, in aged women, functional impotence led to a reduction in the exposure to stress and therefore to a reduction in the risk of stress IU of while it increases the risk of urge UI by increasing the time between the beginning of the need and the arrival to the toilet. The main objective of the study is to determine if functional impairment is associated with UI in aged women.

Study design, materials and methods

Recruitment in the study was based on the electoral lists. Women aged between 75 and 85 years were invited to an evaluation that includes a questionnaire, and functional tests.

Questionnaire used were a health-related quality of life questionnaire (SF36) and a questionnaire on IU (ICIQ-SF). We distinguished stress UI ("leaks when you cough or sneeze," or "leaks when you are physically active/exercising") and urge UI ("leaks before you can get the toilet"). Functional tests include, 6 tests: - 3 walking and standing tests: a walking path of 6 meter; get up and go which is the time taken to rise from a chair, walk 3 meters, turn around and sit down again; time for arising from a chair 5 times without using hands; - 3 balance tests: time during which the woman can stay in tandem position (heel of front foot against the toe of the hind foot), the test is positive if held more 10 second; do 4 steps in line, placing the heel of the front foot against the toes of hind foot; and the one-leg balance test.

Results

We include 1942 women between January 2008 and January 2010 in 9 centers. ICIQ-SF score has been calculated in 1922 women (99%), it was equal to 0 in 1107 women (57%) and greater than 0 in 815 (42%). Among these 815 incontinent women, the average score for the ICIQ-SF was 7.59 (± 4.14). In a little more than half (57%) cases, leaks were daily. In the majority of cases (78%), it was a small amount. The average disturbance with everyday life was 3.04 (± 2.60). There was a correlation between the ICIQ-SF score and the alteration of certain areas of health-related quality of life (SF36), the correlation was significant with the score of physical ability (Pearsson coefficient -0.22360; $p < 0.0001$), and with the score of vitality (-0.09241; $p < 0.0001$), but not with the score of perceived health 0.02943 (0.21).

Of the 815 incontinent women, 194 (23.8%) have stress IU, 251 (30.8%) urge UI, 302 (37.1%) mixed UI, and 45 (5.5%) UI in other circumstances.

Table 1: Functional tests of walking, standing and balance and UI severity based on the ICIQ-SF score.

N	UI severity {ICIQ-SF score}					p
	{0}	{1-4}	{5-7}	{8-11}	{12+}	
Walking 6 meters (s)	6.4	6.7	7.0	7.5	7.7	<0.0001
Get-up and go (s)	10.6	11.1	11.7	12.3	12.6	<0.0001
Rising 5 times without using hands (s)	14.8	15.8	16.2	17.1	17.0	<0.0001
Able of holding 10s in tandem (%)	72.4	69.3	69.1	63.4	55.4	<0.0001
Able of doing 4 steps in line (%)	68.2	63.3	58.3	55.5	48.0	<0.0001
One-leg balance test (s)	10.6	9.8	9.5	8.6	6.9	<0.0001

Univariate analysis showed deterioration in walking, standing and balance tests depending on the severity of UI (Table 1). The two multivariate regression models show that time for walking 6 meters and tightrope walking test were independently associated with UI and severe UI (ICIQ-SF score ≥ 8).

Univariate analysis showed that walking, standing and balance tests are worse in women who suffer from urge UI and in those who suffer from mixed UI compared with continent women. The results of tests of walking and standing are also worse in women who have stress, however there is no difference for balance tests between women with stress IU and continent women (Table 2). Logistic regression shows that after adjustment on age and centre, balance disorders and motor disorders remain significantly associated with urge UI and mixed UI, but there is no significant association with stress IU.

Table 2: Functional tests of walking, standing and balance and type of UI. Univariate analysis, each type IU compared to no-IU.

N	No UI		Stress UI		Urge UI		Mixed UI	
	1107	194	p	251	p	302	p	
Walking 6 meters (s)	6.4	6.8	0.02	7.3	<0.0001	7.2	<0.0001	
Timed up and go (s)	10.6	11.3	0.007	12.2	<0.0001	11.9	<0.0001	
Stand 5 times without arm help (s)	14.9	15.9	0.003	16.8	<0.0001	16.4	<0.0001	
Able of holding 10s in tandem (%)	72.4	71.1	0.73	65.0	0.02	63.6	0.003	

Able of doing 4 steps in line (%)	68.2	64.4	0.30	50.6	<0.0001	58.3	0.0012
Monopodal balance test (s)	10.6	9.6	0.17	9.1	0.02	8.2	<0.0001

Interpretation of results

In our population of 75-85 aged women, UI was common (42%) and more often mixed (39%). More UI was severe and more functional tests of motor skills and balance were altered. Alteration of functional testing is especially found in urge and mixed UI. Our findings on the prevalence and the type of UI of old women are consistent with previous work [1].

Functional limitations may increase the risk of UI in urge UI. Women who have mobility difficulties take longer to reach the toilet, which increases the risk of leakage in case of urge. We know that use of a wheelchair or device for walking is associated with the risk of developing incontinence during hospitalization [2]. Improvement of the ability to perform daily activities is associated with a remission of symptoms of urge UI [3]. Another explanation could be that women who have frequent pressing needs have more likely to limit their activities to do not stray too far from the toilet. Progressive physical deconditioning which follows leads to a decrease in the locomotion physical capacities. UI is associated with a risk of functional decline, falling and admission to an institution. The association may be circular, it is known that after a fall, many women limit their activity for fear of falling which, here again, gradually will lead to a physical deconditioning which will result in the term by a reduction in the capacity of walking and balance as well as a decrease in the perimeter of urinary autonomy.

Another hypothesis is also possible: the existence of a common cause for the occurrence of the IU and walking, standing and balance, aging-related disorders. For example, some neurological conditions (e.g., stroke) or some drugs acting at the central neurological level could result in both UI and physical disorders [2].

The main quality of our study, is that we used quantitative and well standardized functional tests that specifically measure capacity walking and balance, and that we examined the relationship with each type of UI separately.

Concluding message

Our study confirms that UI is a very common health problem in elderly women living in the community, and that there is a strong association between the UI and functional disorders which is proportional to UI severity and mainly concerns urge and mixed UI. These results open up new perspectives for the support of urge and mixed UI in elderly women.

References

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