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VAGINAL-PELVIC FLOOR EMG ACTIVITY IN HEALTHY AND INCONTINENT 52-62 YEARS OLD WOMEN IN A SWEDISH COMMUNITY.

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Introduction: Women with stress, urge and mixed incontinence seem to have a chronic and progressive pelvic neuromuscular disorder in common. In two previous studies from our group (Gunnarsson and Mattiasson 1994 and 1999) all three groups of patients showed a pronounced reduction of vaginal-pelvic floor surface EMG-activity, and with a highly significant difference from healthy women in age groups exceeding 50 years. The patients in these studies were not randomly recruited but rather submitted to our department, which of course could have meant a certain bias. For the present study we recruited healthy and incontinent women directly from the general population in our own community, Lund. We were interested to investigate the distribution of pelvic floor/vaginal insufficiency not only in incontinent women, but also in the so called healthy part of the population.

Material and methods: A questionnaire was sent out to 10800 women 50-60 years old, and 6917 responded. Incontinence of any degree on a VAS-scale from 1 to 10 was found in 32%, a third of which (11%) were considered as incontinence that actually demanded treatment. Sixty of the women, who on the VAS-scale had 3 or more points were recruited for participation in this study. Most had slight or intermediate symptoms and bother. The present investigation started approximately two years after initiation of the large questionnaire study. The average age of the recruited women was therefore 57 years in both the healthy and the incontinent groups. Thirty randomly recruited healthy women, matched regarding age and parity, were also included. All women underwent physical examination, including pelvic floor muscle status (semiquantitative estimation of muscular thickness and contractile ability 1-4), circumvaginal surface EMG (μ V) and vaginal pressure measurements (cm H₂O) during rest and squeeze. The findings in urge and mixed incontinent women were grouped together as women with an urge component.

Results: The results from 54 of the 60 incontinent women have been completed, and are included here. The amount of urinary leakage per 24 h was 25 +/- 9 and 19 +/- 5 g, for the two incontinent groups, those with stress incontinence (n=27) and those with an urge component (n=27), respectively. Maximum vaginal surface EMG values were significantly

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reduced both in incontinent women with and without an urgency component. Those diagnosed as stress incontinence had EMG values of $14.4 \pm 0.7 \mu\text{V}$, whereas women with urge/mixed incontinence had $16.6 \pm 1.1 \mu\text{V}$. Corresponding findings in the healthy women was $19.5 \pm 1.6 \mu\text{V}$. The differences between the healthy women and the incontinent groups was significant, and for stress incontinence vs healthy it was highly significant. A similar, but less pronounced pattern, was found in the vaginal pressure measurements with 11.3 ± 1.2 , 12.2 ± 1.1 and $14.3 \pm 1.5 \text{ cm H}_2\text{O}$, respectively.

In approximately 15% of the healthy women a reduction of the vaginal EMG was found. The condition of the pelvic floor muscles was estimated with palpation and expressed semiquantitatively on a scale from 4 (normal) to 1 (severely reduced/absent). The values for the incontinent women were 2.5 ± 0.1 and 2.3 ± 0.1 for those with stress and urge/mixed incontinence, respectively. The values in the healthy volunteers were 3.3 ± 0.2 .

Conclusions: Incontinent Swedish women in the age interval 52-62 years recruited from the general population on a random basis have a significantly decreased ability to activate the pelvic floor/vaginal muscles as compared to age and parity matched healthy controls. These changes are significant when measured both with vaginal EMG and with vaginal pressure measurements. They are most pronounced when studied with vaginal surface EMG. This is in line with previous findings in patients at our hospital and in healthy volunteers recruited in a non-random way, who had an even further reduction of their EMG values. Slight or no differences were seen between women with symptoms of stress, urge or mixed incontinence, which further supports the presence of a common pelvic neuromuscular disorder underlying the symptom of female incontinence in general. The pelvic floor disorder is not always accompanied by urinary incontinence, since also a group of healthy females had a reduced vaginal-pelvic floor surface EMG activity.

References:

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