162

Karantanis E[1]
1. St George Hospital, Sydney

LEAKAGE VOLUME PER LEAKAGE EPISODE: A NOVEL APPROACH TO ASSESSING AND STUDYING PATHOPHYSIOLOGY IN URINARY INCONTINENCE

Hypothesis / aims of study

Using a 24-hour pad test simultaneously with a urinary diary allows an appreciation of the degree of leakage together with the frequency of leakage episodes. In this way, the average amount of leakage per leakage episodes can be determined. This novel approach may have several uses in clinical practice and research. In this study this calculation has been used to further investigate the pathogenesis of Urodynamic Stress Incontinence (USI) in women.

It is unclear whether women with USI who have greater leakage on 24-hour pad tests have more frequent episodes of leakage, or whether they leak greater amounts per leakage episode without an increase in leakage frequency. The aim of this study was to gain insight into the reasons for the difference in leakage severity in women with USI. Such information may help in the understanding of the pathogenesis of USI.

Study design, materials and methods

A series of women presenting to a Urogynaecology Unit with predominant stress urinary incontinence symptoms confirmed at urodynamics, were approached to undertake a 24-hour pad test while simultaneously performing a 24-hour bladder diary. In this way the severity of leakage on the pad tests could be compared to the frequency of leakage on the bladder diary. Furthermore, by dividing the pad test weight gain by the number of leakage episodes on the bladder diary, an average leakage volume per leakage episode could be calculated.

This study was part of a further study that had ethical approval. Inclusion criteria included women with urodynamic stress incontinence with no prior surgical treatment. Exclusion criteria included predominant overactive bladder symptoms or evidence of detrusor overactivity at urodynamics. Analysis was by correlation using Kendall's Rank Test as data were non-parametric.

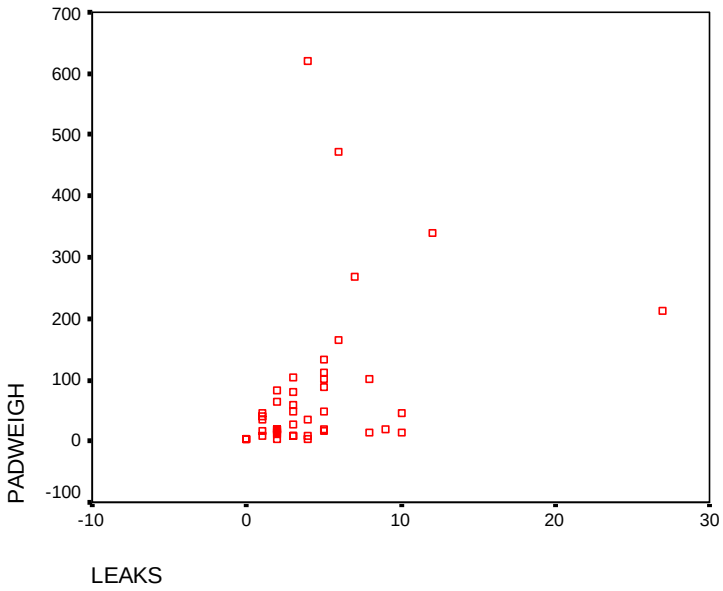
Results

41 women had correctly completed both pad test and simultaneous urinary diary information to enable analysis. These were mean age 54 (SD 13), parity 2.1. Prelimary correlations showed independent significant correlation between pad test results and that of age and parity, but not body mass index. Thus partial correlations were performed correcting for age and parity. As shown in Graph 1, there was no correlation between pad weight and the frequency of leakage despite partial correlation. Correcting for age and parity (tau-b = 0.245 p= 0.12). However, partial correlation between pad weight and the calculated leakage volume per leakage episode (corrected for age and parity) gave a tau-b correlation of 0.833 (P=0.01). (see Graph 2).

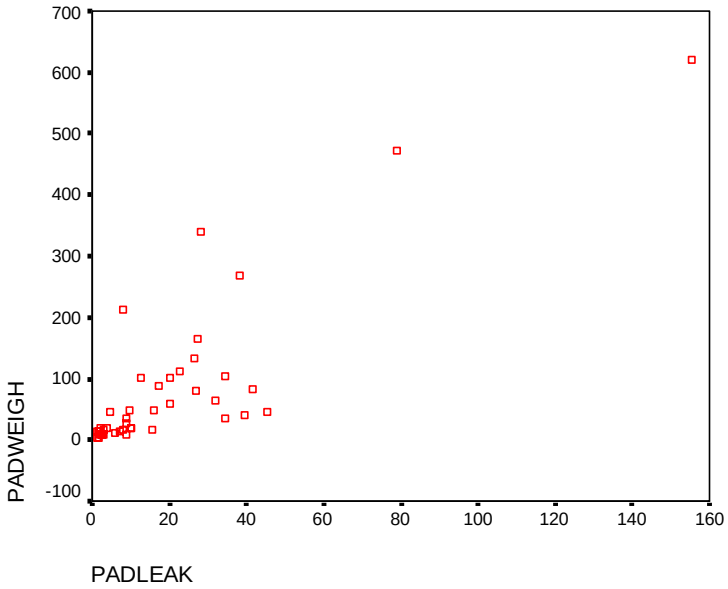
Interpretation of results

Graph one shows similar numbers of leakage episodes regardless of the overall leakage severity. Graph two shows that greater overall leakage on the 24-hour pad test is associated with increasing leakage per leakage episode.

Graph 1. Pad weight versus leakage frequency. Y axis represents 24-hour pad test weight gain in grams. X- axis represents the number of leaks documented on the urinary diary over the duration of the pad test.



Graph 2. 24-hour pad weight (Y-axis) versus average leakage volume per leakage episode calculated from urinary diary (X-axis).



Concluding message

It would appear that women with severe stress leakage experience greater leakage per leakage episode and do not leak more often than women with less severe pad test results. Thus, women with severe pad test weight gain may have a weaker urethral closure mechanism, or otherwise generate greater pressure transmission than women with milder leakage.

Calculation of leakage volume per leakage episode is a novel approach to the assessment of urinary incontinence. Further work is required to assess validity. The test may help distinguish women with detrusor overactivity from those with stress urinary incontinence.

FUNDING: **NONE**
DISCLOSURES: **NONE**
CLINICAL TRIAL REGISTRATION: **This clinical trial has not yet been registered in a public clinical trials registry.**
HUMAN SUBJECTS: **This study was approved by the Wandsworth Local Area Ethics Committee London and followed the Declaration of Helsinki Informed consent was obtained from the patients.**