387

Kuteesa W[1], Cartwright R[2], Karantanis E[1]
1. Pelvic Floor Unit, St George Hospital, Sydney, Australia, 2. King's College Hospital, London. UK.

DOES CONDENSATION COUNT IN THE 24 HOUR PAD TEST? A (SMALL) MULTI-NATIONAL TRIAL.

Hypothesis / aims of study

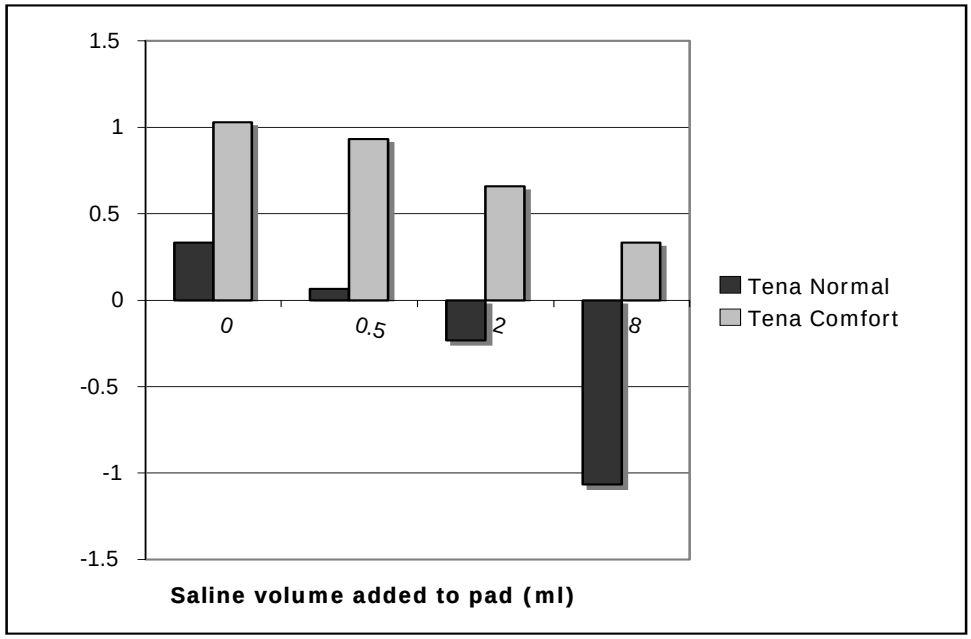
The normal ranges for the 24-hour pad test have been a subject of controversy, with differing results reported with different populations and with different pads (1,2). The weight accumulated on a pad reflects a combination of factors, including not only urine loss, but also absorption of perineal sweat, and is modulated by evaporation from the pad. In the incubator environment, differences in the capacity of different types of pad to absorb atmospheric moisture and allow evaporation from the pad can be observed (3). However these differences may not reflect pad weight changes in the physiological perineal environment. The aim of this study was to examine the absorptive and evaporative characteristics of two different types of pad in the perineal environment in order to gain a better understanding of factors influencing normal ranges and pad weights in the measurement of urinary incontinence.

Study design, materials and methods

In 2 centres (Sydney, London), 3 healthy male volunteers were recruited. Only male volunteers were selected so as to remove any chance of variation due to vaginal secretion. All volunteers screened negative for bothersome urinary incontinence symptoms using the validated ICIQ-SF instrument, and also had no anal incontinence. Pads were shipped from Sydney to London in order to remove any potential variation in manufacturing methods of the pads. Volunteers wore two types of pads (Tena Lady Normal, and Tena Comfort mini Extra). Each type of pad was tested 4 times by each volunteer, using different volumes of saline instilled on to the pad at the start of each test. The tests were conducted with a dry pad (0ml), a pad with 0.5ml of saline, a pad with 2ml of saline, and also one with 8ml of saline. On each occasion, the pad-saline combination was worn for 4 hours, with the used pads sealed in an airtight bag pending weighing. Pads were then weighed using a calibrated scale with an accuracy to 0.1g. These volumes of saline were chosen to represent a range between nil urinary loss, and moderate incontinence. Changes in pad weight were compared using the paired t test.

Results

Figure 1: Mean increment in pad weight after 4 hours with different volumes of added saline.



The mean change in weight for each type of pad at each volume is shown in Figure 1. With no saline instilled on the pads, the larger Tena Comfort pads still significantly gained weight, absorbing a mean of 1.03g of fluid. The Tena Normal perfomed better, gaining only 0.33g of fluid. With increasing volumes of saline added to the Tena Normal, evaporation exceeded condensation. With 8ml of saline added, the Tena Normal lost a mean of 1.33g, a 16.6% loss. The higher absorptive capacity of the Tena Comfort caused it to perform better with increasing saline volume. With 8ml saline added the Tena Comfort still gained 0.33g of fluid. At this larger volume, the difference between pads was highly statistically significant (p=0.0017).

Interpretation of results

The apparent differences in results shown with two types of pads in just a 4-hour period show that in a normal perineal environment, pad weight gain varies with pad composition. At the lower volumes, the Tena Normal appears to more accurately reflect actual losses. At higher volumes, the Tena Comfort more accurately represents actual leakage. The Tena Normal would therefore be preferable for a pad test assessing cure, whereas the Tena Comfort might be more

accurate (and perhaps necessary) for pad tests assessing heavy leakage. The use of males in this study removed the variable of vaginal secretions from analysis, but has also resulted in a limitation in the number of volunteers recruited for this study. However, the results of this study echo those found in the larger incubator study (3).

Concluding message

In the physiological perineal environment the differing characteristics of different types of incontinence pad lead to marked discrepancies in evaporation and condensation, even over a four hour period. These differences may explain the different normal ranges observed in previous studies of pad tests. The rate of absorption and evaporation is not independent of the amount of fluid on the pad, and therefore different types of pad may be preferable for different clinical or research purposes.

References

1. Br J Obstet Gynaecol. 1996;103(2):162-7.

2. BJOG. 2003;110(6):567-71.

3. Neurourol Urodyn. 2004;23(5-6):570-71.

.

FUNDING: none

HUMAN SUBJECTS: This study did not need ethical approval because volunteers were the abstract authors but followed the Declaration of Helsinki Informed consent was obtained from the patients.