134: URINARY ATP CONCENTRATION IS DEPENDENT ON THE TIME SINCE THE PREVIOUS VOID AND NOT DILUTION.

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INTRODUCTION

1) There is currently much interest in looking for discriminatory urinary biomarkers for overactive bladder (OAB).

2) ATP is well placed to be such a biomarker as it is released from the urothelium in response to bladder wall stretch, and a significant fraction should reach the urine.

3) It is unknown how hydration status and time since the last void affect ATP levels.

4) To be able to fully understand any changes in the amount or release patterns of ATP in OAB it is an essential prerequisite to understand how its levels vary in healthy people with normal bladder function.

ETHICS

Ethical approval was received from the King's college ethics board (HR-16/17-3859).

METHODS

1) Urine samples were collected from volunteers (7 female and 5 males) without LUTS, at 15, 30 , 60, 120 and 240 mins after the last void.

2) Total void volume was recorded and used to calculate time to produce each ml of urine assuming a constant rate between voids.

3) Aliquots of urine were immediately frozen at -20 °C for later measurement of ATP (luciferin-luciferase assay) and creatinine concentration (Cayman colorimetric kit).

4) Data are mean ± SEM, data sets were compared with ANOVA and post hoc unpaired t-tests.

FUNDING

This work was kindly funded by Allergan, Ltd.

RESULTS

(a)

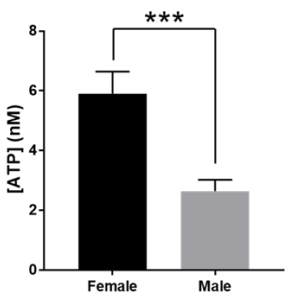

Fig 1a: Mean urinary ATP concentration of all samples is significantly higher in women (black bar) than men (grey bar). 5.9 ± 0.7 nM (n=7) cf. 2.6 ± 0.4 nM (n=5).

(b)

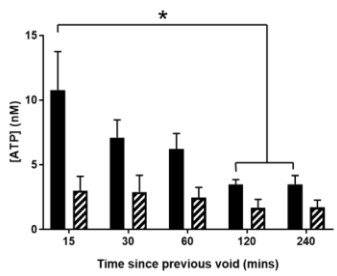

Fig 1b: Mean urinary ATP concentration decreases with time since the last void. Female (dark bars, n=7) 10.4 ± 2.5 nM at 15 mins cf. 3.3 ± 0.4 nM at 120 mins. Males (n=5, striped bars).

(c)

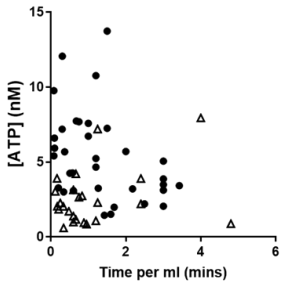

Fig 1c: Urinary ATP concentration does not correlate with filling time (time since last void/total urine volume). Filled circles (females), open triangles (males).

SUMMARY

Urinary ATP concentration is:

1. Higher in women that men.
2. Higher when voiding more frequently.
3. Not a simple function of urine dilution.

CONCLUSIONS

1) Normalising ATP conc. to dilution may be misleading.
2) Care is needed when comparing patients who have increased daytime frequency and controls.