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A DOUBLE-BLIND, RANDOMISED CONTROLLED TRIAL OF CYSTOMETRY USING NORMAL SALINE VERSUS 3M POTASSIUM CHLORIDE INFUSION

Hypothesis / aims of study

Normal saline is the most commonly used infusion for cystometric studies. The diagnostic accuracy of potassium chloride (KCl) in the hypersensitive bladder (e.g. interstitial cystitis) has received conflicting reports. We undertook a double blind, prospective controlled trial of urodynamics using both saline and potassium chloride infusions to help clarify the issue.

Study design, materials and methods

Twenty four women (mean age = 47 years) with significant irritative bladder symptoms were recruited to this study. A frequency-volume record was completed in all cases. Each patient underwent filling cystometry (CMG, ICS protocol) using infusions of normal saline and 0.3M potassium chloride (KCl), the order of which was randomised. In all cases, the bladder was filled to at least functional bladder capacity. Each individual CMG was performed by a different investigator and both patients and investigators were blinded to the order in which each solution was given and to the results of the other CMG.

Results

Volume at first desire to void [FDV] was lower with KCl solution (mean 110mls vs. 71mls, $p=0.13$). KCl infusion produced a 29% reduction in maximum cystometric capacity [Cmax.] compared to saline (mean 206mls vs. 289mls, $p=0.01$) irrespective of the order of infusion. Though KCl evoked more intense symptoms, no patient experienced pain. There was no significant difference in the tests between the two investigators ($p>0.05$). Patients with detrusor overactivity [DO] and interstitial cystitis [IC] had a 22-25% lower FDV ($p>0.05$) and an 18-33% reduction in Cmax ($p>0.05$) with KCl. This was most pronounced in patients with DO.

Interpretation of results

The volumes at FDV and Cmax were lower using KCl compared to saline in all patients. Patients with DO or IC had both reduced FDV and Cmax with KCl, more pronounced in DO. Neither the order of infusions nor the investigators influenced the results.

Concluding message

It is possible that KCl may act not on the urothelial sensory mechanism but rather on the detrusor muscle.