

Poster Session: Bladder Dysfunction

43

The effects of potassium-channel modulation using Zeneca ZD6169 and Levromakalim on human bladder muscle contractility

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Introduction: The presence of detrusor instability is related to increased smooth muscle excitation which in turn may be a consequence of changes in ionic conduction across the muscle cell membrane. K⁺ conduction along specific ion channels is fundamental to this process. This study has therefore examined the role of K⁺ conduction using specific K⁺ channel openers (KCOs) on the human bladder. **Patients and methods:** Detrusor muscle from urodynamically evaluated stable and unstable bladders was harvested at surgery. Using the Voltage-Clamp technique on single muscle cells, K⁺ conduction and its modulation were measured using the KCOs ZD6169 and Levromakalim. Tension-recording experiments of field-stimulated muscle strips were also undertaken to assess the effect of KCOs on detrusor contractility.

Results: ZD6169 and Levromakalim caused a concentration-dependent relaxation of human detrusor muscle strips. ZD6169 (1 µmol/L) and Levromakalim (1 µmol/L) produced a mean relaxation of 62.3 (2.4)% (*n* = 4) and 80.2 (0.5)% (*n* = 4), respectively. When single detrusor muscle cells were held at -10 mV under calcium-free conditions, ZD6169 (10 µmol/L) and Levromakalim (10 µmol/L) each induced a Glibenclamide (10 µmol/L) sensitive, non-inactivating current which was accompanied by a hyperpolarization of the zero current by approximately 25 mV.

Conclusion: These data show that ZD6169 and Levromakalim selectively induce current flow through ATP-sensitive K⁺ channels and that this induces smooth muscle relaxation in human detrusor smooth muscle. The results suggest that KCOs may have considerable therapeutic value in the treatment of detrusor instability in humans.

44

The preliminary results of detrusor myomectomy for detrusor instability and hyper-reflexia

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Introduction: Over the past 18 months, 10 selected patients with detrusor instability or hyper-reflexia who would have previously been treated by clam augmentation ileocystoplasty underwent detrusor myomectomy.

Patients and methods: Ten patients aged 8–42 years (mean 22.4) with urodynamically proven instability or hyper-reflexia underwent a fairly radical transperitoneal detrusor myomectomy. In every case, the denuded urothelium was completely covered with a layer of omentum. Four patients had recalcitrant, congenital diurnal/nocturnal enuresis, two had idiopathic instability with urge incontinence, and four were neuropaths, all but one myelodysplastics. Neuropaths with hydronephrosis and/or reflux were not considered suitable. All patients were reviewed subjectively and videourodynamically.

Results: Of the congenital instability group, two were cured, and two improved. Only one became urodynamically stable, although in the other three, the curve was significantly shifted to the left. Both the patients with idiopathic instability were cured subjectively and objectively. Of the four neuropaths, three were subjectively and objectively unchanged and one who had the most extensive excision of the detrusor was subjectively cured, but again videourodynamics showed only a shift of the curve to the left.

Conclusion: Preliminary results of the detrusor myomectomy suggest it is reasonably effective in controlling detrusor overactivity. However, the more gross the pathology, the more radical the excision of the muscle needs to be, and the less likely it is to achieve subjective or objective improvement.

45

Interactive multi-media computer-based patient information program for patients with incontinence

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Introduction: Increasing pressure is being put on clinicians to provide greater information to their patients about the conditions from which they suffer, their investigation and treatment. We report the development of an interactive, computer-based information system for patients with incontinence.

Methods: The patient is prompted to select a topic such as 'urge incontinence' from a button menu. Choices are made by touching the buttons on the screen, avoiding the need to use a 'mouse'. Once pressed, information relating to the menu button is delivered as speech, with accompanying graphic or video material. The provision of 'sub menus' (i.e. 'what causes urge incontinence?' 'how will my problem be investigated?') within a topic, permit the user to explore a topic area more fully if desired. The use of each topic area and behaviour within each topic area is recorded by the program and downloaded to a database for analysis. The program is evaluated using a structured questionnaire enquiring about ease of use, content and usefulness.

Results: Scripts for each topic area have been peer-reviewed. The program is undergoing pilot studies within the department at present. It appears to be user-friendly and the format and content appear to be satisfactory.

Conclusions: This interactive multi-media computer-based patient information program appears to provide a user-friendly and informative resource for patients with incontinence. Randomized clinical trials are required for comparison with traditional systems of informing patients.

46

3-day versus 7-day frequency/volume charts

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Introduction: Patients filling in a frequency/volume chart have commented on the difficulty in keeping an accurate record for 7 days and we have often allowed them to keep a chart for 3 days instead. The aim of this study was to assess whether this compromise gave comparable results.

Materials and methods: The records from 30 patients who filled in a complete chart for 7 days were analysed. The results for the first 3 days were compared with those for the whole week and are expressed as the percentage difference between them. A reasonable correlation for the measured variables was considered to be present if the mean difference was < 10% and the maximum difference was < 25%.

Results: The following variables had a reasonable correlation: total frequency for 24 h, daytime frequency, total voided volume for 24 h, total voided volume during the daytime period, mean overall individual volume and the mean daytime individual volume. The following were poorly correlated: night-time frequency, total voided volume during the night, maximum individual volume, average night-time individual volume and the night/daytime diuresis ratio.

Conclusion: When a frequency/volume chart is used, the patient should be encouraged to keep an accurate record for at least 7 days.

47

Cystitis associated with tiaprofenic acid (Surgan™); a survey of British and Irish urologists

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Objective: To quantify the extent and natural history of cystitis induced by the NSAID tiaprofenic acid.

Methods: Anonymous postal questionnaires were sent to all UK and Irish consultant urologists, asking about experience of adverse effects from tiaprofenic acid.

Results: Of the 357 urologists, 45.7% replied; 37.4% of those who responded had cases of NSAID-concurrent cystitis. 35.6% replied that they had no personal experience but were aware of the possibility of an adverse drug reaction and 27% were unaware of the possibility of NSAID-related interstitial cystitis. There were 112 cases of cystitis; 57 (54%) were women, 12 (11%) were men and gender was not stated in 43 (35%). Of the 112 patients, 110 were taking tiaprofenic acid, and two naproxen. The median duration of treatment was 59 weeks (range 6 weeks to 4 years). In 59 (86%), symptoms abated completely on stopping the drug, resolving in a median 14 weeks (range 7 days to 2 years). In seven cases (10%) there was incomplete or no resolution of symptoms. Within our survey, 17 patients had undergone reconstructive urological surgery.

Conclusion: Tiaprofenic acid has caused at least 110 cases of cystitis and several patients underwent extensive urological surgery based on a diagnosis of interstitial cystitis, which is difficult to exclude clinically or histologically. Most cases were reversible, but some were not and patients were left with severe symptoms. It appears that tiaprofenic acid causes a much higher incidence of cystitis than any other NSAID; its withdrawal from the market should be considered.

48

Assessment and quality of life following clam ileocystoplasty

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Introduction: The outcome of clam ileocystoplasty was assessed by questionnaire and independent analysis. Cure was defined as spontaneous voiding with no incontinence. Questions were designed to assess outcomes subjectively, based on patients' perceptions, and objectively, based on validated scoring systems.

Patients and methods: Between 1989 and 1994, 31 patients (16 male and 15 female) underwent clam ileocystoplasty. The median age was 42 years (13–75). The clam was performed after failed pharmacological treatment. The length of follow-up for this patient cohort was a median of 18 months (range 1–4 years).

Results: The overall cure rate was assessed objectively at 61%; 72% of patients described a subjective improvement of symptoms and a few patients (12.5%) were subjectively worse after the operation. Quality of life was improved in 75% of patients, with 12.5% showing no improvement and 12.5% worse. Fifty-six percent of patients noted a minor degree of voiding dysfunction whereas 25% noted moderate and 19% noted severe voiding dysfunction.

Conclusion: Clam ileocystoplasty offers improvement with satisfaction in patients with refractory detrusor instability and hyper-reflexia. Some patients are not improved or are made worse as a result of the procedure. Analysis of outcome based on standardized questionnaires allow patients and surgeons to make informed decisions with realistic expectations.