

AUA 2011 Annual Meeting

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A review of research into IC, painful bladder syndrome, chronic pelvic pain and related disorders

Jane Meijlink

Once again, the annual meeting of the American Urological Association (AUA) was an interesting source of information about IC, painful bladder syndrome, chronic pelvic pain and related disorders with a substantial number of studies presented on all aspects of this topic and additionally no fewer than three very good courses together covering the whole field. This is yet another indication of how awareness and interest has progressed in the past 25 years. We can also see how insights and therapeutic approaches are continually changing, urologists now thinking outside the box, IC viewed in a wider setting, more interest being paid to men and IC, and more involvement of manual therapy, this year in the form of a device for triggerpoint self-treatment. However, we are not there yet and much of IC still remains the enigma it always has been. Research needs to continue and the patient movement can play an important role here in highlighting aspects that the patients themselves feel have been overlooked and need researching.

RESEARCH

Research presented at the 2011 AUA annual meeting in the field of IC, painful bladder syndrome, chronic pelvic pain and related disorders included the following selected abstract reviews:

Abstract #212

CYCLOPHOSPHAMIDE-INDUCED CHRONIC CYSTITIS ENHANCES PAIN BEHAVIOR AND BLADDER CAPACITY REDUCTION ELICITED BY RESINIFERATOXIN IN RATS

Tomohiko Oguchi, Osamu Nishizawa, Naoki Yoshimura

The authors note that while rats with chronic cystitis induced by repeated cyclophosphamide (CYP) injections have been used for basic research of hypersensitive bladder disorders including BPS/IC, changes in pain behaviour and voiding function in this model have not been well characterized. In this study, they therefore evaluated voiding and nociceptive behaviour following intravesical application of resiniferatoxin (RTX) to see whether frequent voiding and pain sensation are increased in these rats. They found that while bladder overactivity usually seen in rats with acute cystitis subsided after repeated CYP treatments, rats with CYP-induced chronic cystitis exhibit bladder hypersensitivity resulting in increased pain behaviour and smaller bladder capacity when afferent pathways are stimulated by RTX (TRPV1 stimulator). They consequently concluded that this chronic cystitis animal model can be considered to be suitable for studying pathophysiological mechanisms inducing chronic pelvic pain conditions in hypersensitive bladder disorders including BPS/IC.

Abstract #805

PREDICTIVE FACTORS OF PAIN SEVERITY IN PATIENTS WITH INTERSTITIAL CYSTITIS/BLADDER PAIN SYNDROME

Jennifer Rothschild, Marguerite Thomer, Susan Messing, Robert Mayer

Patients with the visceral hypersensitivity syndrome Bladder Pain Syndrome/Interstitial Cystitis (IC) present with a wide range of severity of pain as well as urinary frequency. The causes of this diversity is complex but the severity of the pain does have an impact on the distress experienced as well as the different types of treatment needed to control suffering. The authors believe that finding correlates of pain severity may allow better insight into etiology and treatment. They consequently reviewed the data of 186 patients with a clinical diagnosis of BPS/IC who completed an intake form including characteristics of their IC/BPS as well as comorbid illnesses and report of current pain on a 0-to-10 scale. They found that pain severity did not appear to correlate by age or gender, duration of symptoms, rapidity of onset, dietary food sensitivities or exacerbation of symptoms during the menstrual cycle. It was concluded that although the causes of BPS/IC are unknown and probably multifactorial, the findings from this study suggest that once the bladder develops a state of hypersensitivity, patients with a history of prior pelvic noxious stimuli will be at risk for experiencing substantial pain possibly related to sacral sensitization while in contrast, the actual duration of IC itself does not appear to be significant. The authors suggest that social stress and history of abuse may also predict more severe pain, although the mechanisms may be different. It was also found that patients suffering from migraine and/or asthma also have increased pain profiles.

Abstract # 806

URINARY CHEMOKINES AS NON-INVASIVE PREDICTORS OF ULCERATIVE INTERSTITIAL CYSTITIS

Pradeep Tyagi, Kim Killinger, Vikas Tyagi, Michael Chancellor, Kenneth Peters

The authors note that bladder biopsy studies performed on patients with ulcerative (Hunner's lesion) IC/PBS have shown increased mRNA expression of CXCR3 receptor binding chemokines such as CXCL-9,10,11. The authors therefore hypothesized that increased transcript of these chemokines in bladder tissue will be reflected by the increased levels of respective proteins in urine. In this study, they investigated whether a multi-marker panel of 2 or 3 chemokines in urine can non-invasively differentiate ulcerative IC/PBS from non-ulcerative IC/PBS and potentially replace a diagnosis based on invasive and expensive cystoscopy. They collected urine samples from 10 ulcerative IC/PBS patients with ulcer, 10 non-ulcerative IC/PBS patients, and 10 age, race, and sex-matched control subjects with no symptoms. The presence of lesions in the ulcerative group and the lack of them in the non-ulcerative group of IC/PBS patients were confirmed by cystoscopy at the time of urine collection. Based on their findings, they concluded that a multi-marker urinary chemokine panel can non-invasively discriminate ulcerative IC/PBS from non-ulcerative IC/PBS in an inexpensive manner.

Abstract #807

BLADDER EPITHELIAL CELL EXPLANTS FROM INTERSTITIAL CYSTITIS/PAINFUL BLADDER SYNDROME PATIENTS EXHIBIT DECREASED AKT/WNT SIGNALING AS COMPARED TO MATCHED CONTROLS

Susan Keay, Chen-Ou Zhang

Noting that IC/PBS) is a chronic disorder with bladder epithelial thinning or ulceration, pain, urinary frequency and urgency and that bladder epithelial cells from IC/PBS patients make a glycopeptide antiproliferative factor or "APF" (Neu5Ac α 2-3Gal β 1-3GalNAc α -O-TVPAVVVA) that binds to CKAP4 and inhibits cell growth, the purpose of this study was to determine whether IC/PBS explants have evidence for decreased Akt/Wnt signalling, and whether abnormalities in Akt/Wnt signalling could be induced by APF treatment of normal cells. On the basis of their findings, they concluded that explanted IC/PBS bladder epithelial cells have decreased Akt/Wnt signalling, resulting in significantly decreased nuclear β -catenin and JunB, plus decreased downstream MMP2 expression and that their findings suggest that inhibition of Akt/Wnt signalling by APF may play a role in the decreased proliferation and altered differentiation of IC/PBS bladder epithelial cells previously noted in several laboratories.

Abstract #808

THE EFFECTS OF CAFFEINE ON THE SYMPTOMS OF INTERSTITIAL CYSTITIS/PAINFUL BLADDER SYNDROME: A RANDOMIZED, PLACEBO-CONTROLLED DOUBLE BLIND STUDY

Amin Herati, Barbara Shorter, Mostafa Sadek, Helen Levey, Zhamshid Okhunov, Robert Moldwin

Bearing in mind that caffeine-containing products have been thought to exacerbate irritation of the bladder in IC/PBS patients, the purpose of this study was to define the relationship between caffeine and IC symptoms by assessing changes in irritative voiding symptoms and pelvic pain. Consecutive IC/PBS patients were randomized to receive either a pill containing 100mg of caffeine or placebo using a four block randomization scheme. All subjects were asked to abstain from caffeine for one to two days prior to the start of the study and to complete a questionnaire consisting of a modified O'Leary Sant symptoms and problem index (OSSPI), global response assessment (GRA), and a visual analog pain score (VAS). Patients were also asked to maintain a voiding diary starting two days prior to commencing the study and continuing until two days after taking the assigned pill. Thirty patients with IC/PBS were enrolled in this study, fourteen of whom were randomized to the caffeine arm and sixteen were randomized to the placebo arm. Four patients (28.6%) in the caffeine arm and one patient (6.2%) in the placebo arm dropped out before completing the study. Reasons for withdrawing included fear of the discomfort associated with the caffeine pill and caffeine-withdrawal headaches. Bearing in mind previous studies and surveys, the findings were rather surprising since this randomized, placebo-controlled, double-blind study showed no difference in irritative voiding symptoms or in voiding volume caused by the caffeine pill. This will certainly be a surprise to patients!

Abstract #809

ESTROGEN RECEPTOR EXPRESSION AND POTENTIAL FUNCTION IN INTERSTITIAL CYSTITIS

Wu-Jiang Liu, Jie Jin, Yun-Xiang Xiao, Li-Li Liang, Hai-Feng Wang, Qun He, Ying Wang, Ying-Lu Guo

The purpose of this study from China using bladder biopsy samples from IC patients was to investigate estrogen receptor (ER) expression and its relationship with mast cells in interstitial cystitis. They found that both ER α and ER β were expressed in the bladder tissue, that ER β is mainly expressed in the basal cell layer of the urothelium, while ER α , in very small amounts, was expressed in the connective tissue beneath the epithelium. They concluded from their findings that estrogen receptor is expressed in bladder tissue from IC patients and that estrogen plays a role in mast cell activation. ER α may mediate the mast cell function in cystitis development and estrogen may play an essential role in the pathogenesis of interstitial cystitis.

Abstract #810

CYCLOSPORINE A FOR REFRACTORY INTERSTITIAL CYSTITIS: EXPERIENCE OF TWO TERTIARY CENTERS

John Forrest, Deborah Erickson, Monica Cardona

Taking into account that cyclosporine A (CyA) was effective in a single-arm trial and was more effective than pentosan polysulfate in a randomized trial, the authors report that they offer CyA off-label to refractory IC patients. The presented abstract was a retrospective review of their experience. The 19 patients (12 women, 7 men) in the study had failed oral and/or instillation therapy. The initial dose was 2 to 3 mg/kg/day divided into twice daily doses. After symptoms improved, the dose was decreased gradually as tolerated. Fourteen of the nineteen patients reported a 70% average global improvement in their symptoms. The remainder were non-responders or discontinued therapy early due to side effects including fatigue, muscle cramping, or laboratory abnormalities. They concluded that CyA was effective in the majority of their refractory IC patients. Potential clinical markers to predict a cyclosporine response include the presence of Hunner's ulcer (lesion) or associated collagen vascular disease. While CyA was generally well tolerated, it requires careful monitoring.

Abstract #811

ALTERATIONS IN INFLAMMATORY MEDIATORS IN A RAT MODEL OF CYCLOPHOSPHAMIDE-INDUCED ACUTE VISCERAL PAIN

Celine Auge, Anne-Marie Coelho, Gerald Chene, Marc Dubourdeau, Stefano Palea, Nathalie Vergnolle, Philippe Lluet

This concerned a rat study with cyclophosphamide (CYP)-induced bladder inflammation which is a well established model for painful bladder syndrome. The authors note that they recently showed that CYP induces referred mechanical allodynia and hyperalgesia in female rats and that this acute visceral pain was reversed by 2 non steroidal anti-inflammatory drugs (NSAIDs), ibuprofen and aspirin. The purpose of this study was to identify key inflammatory mediators in urinary bladders and urines which may contribute to the antinociceptive effects of these 2 drugs. This findings of this study showed that altered visceral sensation following CYP injection could be mediated by inflammatory changes in the urinary bladder. Among potential mediators of inflammation, IL-1 β , IL-6 and PGE2 seem to play a key role in the sensitization of peripheral bladder afferent pathways.

Abstract #812

INTERSTITIAL CYSTITIS/PAINFUL BLADDER SYNDROME: EFFECTS OF AGE AND GENDER

Lee Jonat, Joel Teichman

This retrospective study in 89 men and 387 women aimed to determine whether IC/PBS patients present differently by age; whether IC/PBS patients present differently by gender; and whether IC/PBS patients who satisfy NIDDK criteria differ from patients who do not satisfy NIDDK criteria. They found that IC/PBS presents with a worse form of disease as the patients age. Men and women with IC/PBS present similarly. Patients who satisfy NIDDK criteria define a more symptomatic and severe disease compared to patients who do not satisfy NIDDK criteria. A high index of suspicion is required to diagnose male and younger IC/PBS patients.

Abstract #813

INCREASED SYMPATHETIC ACTIVITY ENHANCES BLADDER HYPERACTIVITY AND TRIGGERS BLADDER PAIN.

Ana Charrua, Rui Pinto, Anne Taylor, Sérgio Barros, Alfredo Ribeiro-da-Silva, Célia D Cruz, António Avelino, Francisco Cruz

Interstitial Cystitis (IC) is a bladder disorder characterised by severe pain and inflammation. Chronic inflammation has a profound influence on the autonomic system and sympathetic activity and pain have been long connected. This aim of this rat study was to evaluate the role of the sympathetic nervous system during chronic cystitis and the consequences of sympathetic overactivity on bladder function. According to the authors, their findings indicate that sympathetic activity is enhanced during chronic cystitis and might induce urothelial cells apoptosis, thereby promoting bladder inflammation and sensitization of bladder nociceptors leading to bladder hyperactivity and increased nociceptive activity. They believe that the results as a whole may be relevant to the pathophysiology of IC.

Abstract #814

O'LEARY-SANT QUESTIONNAIRE CHANGES AFTER INTRAVESICAL INSTILLATION OF NOCICEPTIN/ORPHANIN FQ (N/OFFQ) IN PATIENTS WITH INTERSTITIAL CYSTITIS/PAINFUL BLADDER SYNDROME (IC/PBS). A PILOT STUDY

Massimo Lazzeri, Giulio Del Popolo, Maria Celso, Marco Mencarini, Federico Nelli, Francesca Del Corso

The purpose of this study was to investigate the efficacy of intravesical instillation of the naturally occurring peptide nociceptin/orphanin FQ (N/OFFQ) for the treatment of interstitial cystitis/painful bladder/Chronic Pelvic Pain Syndrome (IC/PBS) using the O'Leary-Sant questionnaire in 23 patients

with IC/PBS (21 female, 2 male) with IC/PBS meeting disease diagnostic criteria as defined by ICS. Exclusion criteria were: Hunner's ulcers (lesions) on cystoscopy, intravesical therapy or bladder hydrodistension within the previous 60 days, routine use of narcotics other than codeine or propoxyphene for the previous 30 days, previous bladder surgery, evidence of clinically significant co-morbidities and any condition that in the judgment of the investigator would place the subject at increased risk. According to the investigators, their preliminary results seem to suggest that N/OFQ is able to elicit an inhibitory effect on symptoms in patients, especially pain, with IC/PBS. Further randomised placebo controlled trials are mandatory to confirm these data.

Abstract #815

MEDICAL FACTORS ARE POOR PREDICTORS OF PERCEPTION OF PAIN AND URGENCY IN INTERSTITIAL CYSTITIS (IC)

Jeffrey Janata, Lu Zhang, Robert Elston, Chelimsky Thomas, Gisela Chelimsky, Tony Buffington

From 1993 to 1997, 581 women were enrolled and followed in the NIDDK's Interstitial Cystitis Data Base (ICDB). The authors note that the availability of new statistical methods has improved the ability to extract important observations from datasets since the ICDB was last examined. Associations between IC and disorders with increased pain sensitivity such as fibromyalgia (FM), migraine headache, and irritable bowel syndrome (IBS) led the investigators to hypothesize that patients with IC who also reported having these disorders would report higher levels of pain or urgency than those who did not. On the basis of their findings, the authors concluded that the presence of co-morbidities was not associated with higher levels of pain or urgency.

Abstract #816

PHENOTYPING MEN WITH INTERSTITIAL CYSTITIS/PAINFUL BLADDER

Adam Stewart, Edward Kim, Ragi Doggweiler, Frederick Klein

IC/PBS is most commonly characterized by urgency and frequency of urination, painful urination, and chronic pelvic pain. IC/PBS is less commonly diagnosed in men. Men with refractory pelvic pain and lower urinary tract symptoms who are ultimately found to have IC/PBS frequently demonstrate a common constellation of non-genitourinary symptoms. The purpose of this retrospective study with 166 men was to review the signs, symptoms, and co-morbidities of men with pelvic pain and voiding dysfunction in order to make an earlier diagnosis and start treatment in men with IC/PBS. On the basis of their experience, the authors concluded that men with IC/PBS demonstrate characteristic psycho-social, chronic pain and gastrointestinal problems that concomitantly and adversely affect quality of life and which are similar to those found in women. They suggest that their clinical findings support the role of a multi-disciplinary approach for males with IC/PBS and should alert the urologist to have a low threshold for cystoscopy with hydrodistension.

Abstract #945

PERSISTENT THERAPEUTIC EFFECT OF REPEATED INJECTIONS OF ONABOTULINUM TOXIN A IN REFRACTORY BLADDER PAIN SYNDROME/INTERSTITIAL CYSTITIS

Rui Pinto, Tiago Lopes, João Silva, Carlos Silva, Francisco Cruz, Paulo Dinis

The purpose of this study from Portugal was to evaluate the persistence of the therapeutic effect of repeated intra-trigonal injection of Onabotulinum toxin A in patients with Bladder Pain Syndrome/Interstitial Cystitis (BPS/IC) refractory to first line treatment. Fourteen women with BPS/IC refractory to first line treatment received 4 consecutive intra-trigonal injections of Onabotulinum toxin A. Patients were treated under general anaesthesia. With a rigid cystoscope, 100 U of Onabotulinum toxin A were injected in 10 trigonal sites, each receiving 10 U in 1 ml of saline. All patients were discharged under prophylactic antibiotic. Their findings led them to conclude that their study suggests that intra-trigonal injection of 100 U of Onabotulinum toxin A is safe, effective and maintains effect after repeated injections in refractory BPS/IC. The average duration of the improvement in symptoms was superior to 9 months after treatment.

Abstract #946

HERITABILITY OF INTERSTITIAL CYSTITIS/PAINFUL BLADDER SYNDROME SYMPTOMS IN WOMEN: A TWIN STUDY

Claire Yang, Eric Strachan, WA, Niloofar Afari, Elizabeth Dansie, John Krieger, Dedra Buchwald

The etiology, pathophysiology and risk factors for Interstitial Cystitis/Painful Bladder Syndrome (IC/PBS) are still unclear. Most studies have used clinic populations that may not represent the overall IC/PBS population. To better understand risk factors for IC/PBS in the community, the authors conducted a classical twin study (7,772 twins) to determine the relative contributions of genetic and environmental factors to IC/PBS symptoms. They found that IC/PBS-like symptoms in women were moderately influenced by genetic factors and were predominantly influenced by unique environmental factors. This is the largest twin study on heritability of IC/PBS-like symptoms in a community sample. Future studies should focus on determining unique environmental factors that contribute to IC/PBS-like symptoms including psychological, social, and biological elements.

Abstract #947

ACTIVATION OF CANNABINOID RECEPTOR 2 INHIBITS EXPERIMENTAL CYSTITIS

Zun-Yi Wang, Peiqing Wang, Dale Bjorling

Cannabinoids are known to exert potent analgesic and anti-inflammatory effects and may be useful for the treatment of painful inflammatory bladder disease. Cannabinoid receptor 2 (CB2) is expressed in the bladder, particularly in urothelial cells, and bladder inflammation increases CB2 expression. This team investigated whether activation of CB2 alters the severity of experimental cystitis induced by acrolein and referred hyperalgesia associated with cystitis. According to the authors, treatment with a selective CB2 agonist reduced severity of acrolein-induced cystitis and inhibited bladder inflammation-induced increased peripheral sensitivity to mechanical stimuli. Their data indicate that CB2 plays an inhibitory role in bladder inflammation and subsequent changes in pain perception.

Abstract #948

CHARACTERISTICS AND TREATMENT OUTCOMES OF 458 PATIENTS WITH INTERSTITIAL CYSTITIS IN JAPAN

Hiroshi Hayami, Hideki Enokida, Mari Kawagoe, Masayuki Nakagawa, Seiji Naito, Tetsuro Matsumoto, Jiro Uozumi, Hiromitsu Mimata, Mineo Takei

The authors of this study from Japan note that there has been a recent increase in the number of patients suffering from IC, and the delay in diagnosis and treatment of these patients can cause severe deterioration in the quality of life of the patients due to persistent symptoms. The aim of their study was to investigate characteristics and treatment outcomes of 458 IC patients (354 female and 104 male) who had fulfilled the Japanese Clinical Guideline for IC at 38 affiliated hospitals of 11 universities in Japan between 2002 and 2006. Their study suggested that hydrodistension may be the most effective treatment for IC patients.

Abstract #949

HERPES SIMPLEX VIRUS (HSV) VECTOR-MEDIATED GENE THERAPY OF TUMOR NECROSIS FACTOR-A (TNFA) BLOCKADE FOR BLADDER OVERACTIVITY AND NOCICEPTION

Yasuhito Funahashi, Tomohiko Oguchi, Momokazu Gotoh, William F Goins, James R Goss, Joseph C Glorioso, Naoki Yoshimura

The pathophysiological process of BPS/IC is thought to include neurogenic inflammation in the bladder, in which cytokines including TNF α play an important role. This team therefore examined the effects of TNF α blockade in the bladder and its afferent pathways on bladder overactivity and pain behaviour using replication-defective HSV expressing TNF α soluble receptors (TNFsR) in rats. They concluded from their findings that HSV vector-mediated TNF α blockade gene therapy in the bladder

and bladder afferent pathways reduces bladder overactivity and nociceptive behavior induced by RTX in rats. Consequently, they suggest that TNFR gene therapy could be a new treatment of urinary frequency and/or bladder pain in patients with BPS/IC.

Abstract #950

THE EFFECT OF HONEY ON MAST-CELL DEGRANULATION: A POSSIBLE ROLE IN PAINFUL BLADDER SYNDROME/INTERSTITIAL CYSTITIS (PBS/IC)

Brian Birch, Tamsin Murray, Alan Cooper, Bashir Lwaleed

This study from the United Kingdom examines the use of honey in treating Painful Bladder Syndrome/Interstitial cystitis (PBS/IC). Honey has long been used for the treatment of wounds and has more recently been demonstrated to have beneficial effects on wound healing. The mechanisms include antibacterial properties, cytokine interaction and anti-oxidant effects. Mast cell activity appears to be an important mediator of inflammation in PBS/IC. It is postulated that honey has an effect on mast cell degranulation that would make it a potentially useful agent for intravesical use in this condition. Their findings from this study led them to conclude that a constituent of most honeys inhibits spontaneous and stimulated mast-cell degranulation in a cell line model. This effect was not reproduced using other agents currently employed in clinical practice. Honey, therefore, has distinct potential as an intravesical agent both used alone and in combination. It warrants further investigation as a possible intravesical agent in the treatment of PBS/IC.

Abstract #951

PELVIC ORGAN CROSS-SENSITIZATION IN RATS

Akira Furuta, Yasuyuki Suzuki, Takehito Naruoka, Nozomu Furuta, Shin Egawa, Michael Chancellor, Naoki Yoshimura

Pelvic organ cross-sensitization has been proposed as a potential pathogenesis of bladder pain syndrome/interstitial cystitis. The purpose of this rat study was to examine changes in bladder function after the stimulation of transient receptor potential (TRP) channels in the colon, uterus or stomach because TRP channels are one of the main nociceptive receptors. Their findings led them to conclude that bladder overactivity occurs from 30-60 min after the stimulation of TRPA1 channels, but not TRPV1, V4 or M8, in the colon or uterus, indicating the importance of TRPA1 for the pelvic organ cross-sensitization. In addition, central sensitization seems to be involved in the pelvic organ cross-sensitization because i.t. application of a TRPA1 inhibitor can attenuate the colon-to-bladder cross-sensitization.

Abstract #952

EVALUATION OF PENTOSAN POLYSULFATE SODIUM IN THE TREATMENT OF FELINE INTERSTITIAL CYSTITIS: A RANDOMIZED, PLACEBO-CONTROLLED CLINICAL TRIAL

Tony Buffington, Dennis Chew, John Kruger, Joe Bartges, Larry Adams

The purpose of this prospective, multicenter, double-blinded, placebo-controlled, randomized clinical trial was to evaluate the efficacy of pentosan polysulfate (PPS) for improving lower urinary tract signs (LUTS) in 107 cats with feline interstitial cystitis (FIC). They found that highly statistically and clinically significant improvement of LUTS occurred in all cats, regardless of PPS administration or changes in cystoscopic appearance of the bladder. These results indicate that PPS was equivalent to vehicle for treatment of FIC-related LUTS, and support results from other studies that non-specific therapeutic responses occur commonly in cats with this syndrome.

Abstract #953

ANNEXINS MIGHT BE INVOLVED IN REGULATION OF THE UROTHELIAL TIGHTNESS

Katia Monastyrskaya, Verónica Sánchez-Freire, Eduard Babiychuk, Annette Draeger, Fiona C. Burkhard

The authors note that a leaky urothelium is believed to be one of the causative factors of bladder pain syndrome (BPS). Annexins play a major role in regulation of membrane integrity and function during cellular stress and changes in their levels were observed in several bladder pathologies. The aim of this study was to determine the role of annexins in regulation of urothelial integrity and tightness. They concluded from their results that annexins are differentially localised in the urothelial cell layers, and that the specific membrane association of annexin A2 in the umbrella cells might reflect its structural role. Annexin A2 is necessary for maintaining urothelial tightness, probably due to its interaction with tight junction proteins and actin.

Abstract #954

DEMOGRAPHICS AND CLINICAL CHARACTERISTICS OF THE RICE IC/BPS COHORT

Katy Konkle, Sandra Berry, Lara Hilton, Marika Suttorp, J. Quentin Clemens

This team of investigators recently published US national IC/BPS prevalence estimates as part of the RAND Interstitial Cystitis Epidemiology (RICE) survey. Using standard case definitions with known sensitivity and specificity values, they estimated that between 2.7% and 6.5% of U.S. women have bladder symptoms consistent with a diagnosis of IC/BPS. In the present study they describe the demographic and clinical characteristics of the large community-based RICE cohort, and compare them with those of a smaller, clinically-managed IC/BPS cohort. The authors concluded that their comparison of the RICE community cohort with a smaller, more traditional IC/BPS clinical cohort demonstrates striking demographic, symptomatic and quality of life similarities between the two groups.

Abstract #955

INTRAVESICAL CHONDROITIN SULFATE INHIBITS RECRUITMENT OF INFLAMMATORY CELLS TO A "LEAKY" BLADDER

Robert Hurst, Christopher Engles, Paul Hauser, Daniel Culkin

Replacement of the glycosaminoglycan (GAG) layer with intravesically administered GAGs such as heparin, chondroitin sulfate (ChS) or pentosan polysulfate has proven to be an effective therapy for interstitial cystitis. Previous studies have shown that intravesical chondroitin sulfate binds to and restores the impermeability of surface-damaged ("leaky") urothelium to small ions. The purpose of this rat study was to determine whether therapeutic replacement of the GAG layer in surface-damaged bladder produced a physiologic effect on recruitment of inflammatory cells. They found that in the absence of treatment, neutrophils increased 7- and 11-fold 2 and 4 days following removal of the protective "umbrella cells," and mast cells increased 4- and 6-fold respectively. Treatment of damaged bladder with chondroitin sulfate inhibited the recruitment of inflammatory cells to the detrusor underlying bladder damage by about 40% at day 2 and day 4. They therefore suggest that restoration of the GAG layer is effective in reducing the cellular inflammatory response resulting from leakage at the urothelium.

Abstract #956

INHIBITION OF EXTRACELLULAR SIGNAL-REGULATED KINASES (ERK1/2) ACTIVITY IS EFFECTIVE IN REDUCING BLADDER HYPERALGESIA IN AN ANIMAL MODEL OF BLADDER PAIN

H. Henry Lai, Chang Shen Qiu, Lara Crock, Timothy Ness, Robert Gereau IV

Activation of extracellular signal-regulated kinases (ERK1/2) in dorsal horn neurons is important for the development of spinal central sensitization and somatic hypersensitivity after inflammation. In this study the authors looked at the activation of ERK1/2 in the lumbosacral spinal cord following noxious and innocuous distension of the inflamed (cyclophosphamide-treated) and non-inflamed bladder in female C57BL/6 mice. They also investigated whether inhibition of spinal ERK1/2 activity may alter distension-evoked bladder pain. From their findings they concluded that activation of lumbosacral spinal ERK1/2 is associated with the development of bladder hyperalgesia in a mouse model of bladder pain. Inhibition of ERK1/2 activity is effective in reducing distension-evoked bladder

pain. They believe that their results suggest that aberrant processing of bladder nociceptive information at the level of lumbosacral spinal cord via activation of ERK1/2 signalling pathway may contribute to persistent pain in the context of bladder distension/inflammation (e.g. interstitial cystitis).

Abstract #1367

RAPID ATTENUATION OF ACUTE URINARY TRACT INFECTION PAIN AND COLONIZATION USING AN ASYMPTOMATIC BACTERIURIA STRAIN

Aisha Taylor, Anthony Schaeffer, David Klumpp, Charles Rudick

In the USA, urinary tract infections (UTI) account for approximately 8 million hospital visits annually, the primary reasons for these visits being acute pelvic pain, dysuria and irritative voiding symptoms. Currently, UTI are mainly treated with antibiotics. However, increasing resistance to antibiotics among bacterial strains has developed and become a major concern, making it imperative to develop new treatment strategies. Previously, the authors have shown that an asymptomatic bacteriuria (ASB) strain LPS can reduce NU14 induced acute pelvic pain. In this mouse study, they examine whether an ASB strain can reduce NU14-induced acute pelvic pain and colonization compared with ciprofloxacin and lidocaine. Their data demonstrate that an ASB strain can rapidly attenuate pelvic pain and colonization in an acute UTI pelvic pain model. These ASB-induced reductions occurred when administered either in bladder or the vaginal introitus, suggesting that a vaginal suppository may be considered as a future new type of treatment to reduce pelvic pain and colonization while combating antibiotic resistance.

Abstract #1431

SAFETY AND EFFECTIVENESS OF AN INTERNAL PELVIC MYOFASCIAL TRIGGER POINT WAND FOR UROLOGICAL CHRONIC PELVIC PAIN SYNDROMES

Rodney Anderson, David Wise, Timothy Sawyer, Brian Nathanson

This is an interesting pilot study on a new device for self-treatment of urologic chronic pelvic pain. Pelvic muscle tenderness phenotypes occur often in these patients and pelvic myofascial physical therapy has been shown to be helpful. In this study from Stanford, they evaluated the safety and tolerability of a therapeutic triggerpoint “wand” used internally through the vagina or rectum to enable self-treatment by patients and determined its effectiveness in reducing tenderness in pelvic muscles. This device is a curved wand which serves as an extended finger to locate and release painful myofascial trigger points while an integrated algometer sensor monitors point pressure to prevent excessive or dangerous force. During the study, patients used the wand weekly after education and careful supervision by a physical therapist. 113 of the enrolled 169 patients (male and female) completed 6 months of wand use. 56 patients withdrew but none for adverse events. There were no serious side effects and rare transient episodes of mucosal bleeding. On the basis of the findings of this pilot trial, it was concluded that self-treatment by patients using this therapeutic wand for myofascial TrP release appears to be a safe, viable and economical chronic pelvic pain management option.

Abstract #1511

OUTCOMES OF SACRAL NERVE STIMULATION IN PATIENTS WITH OR WITHOUT INTERSTITIAL CYSTITIS/CHRONIC PELVIC PAIN SYNDROME

Daniel Woodruff, Charlie Bengtson, Bradley Wilson, Tomas Griebeling

Sacral nerve stimulation (SNS) is approved for urinary urgency/frequency, urge urinary incontinence and non-obstructive idiopathic urinary retention. Many of these patients also have conditions such as interstitial cystitis (IC) or chronic pelvic pain syndrome (CPPS). Although IC/CPPS is not a primary indication for SNS, anecdotal reports suggest some patients have symptomatic improvements. This prospective study from Kansas examined clinical outcomes of SNS using a validated instrument, and compared results in those with and without IC/CPPS. The authors concluded that their data

demonstrated that both groups experienced significant improvement in almost all voiding parameters measured by AUA-SS and its component subscores. They note that patients should be counselled regarding realistic goals that can be potentially achieved using SNS for voiding symptoms based on presence or absence of IC/CPPS.

Abstract #1866

INCREASED SERUM NERVE GROWTH FACTOR LEVELS IN INTERSTITIAL CYSTITIS/PAINFUL BLADDER SYNDROME AND OVERACTIVE BLADDER SYNDROME REFRACTORY TO ANTIMUSCARINIC THERAPY

Hsin-Tzu Liu, Hann-Chorng Kuo

The purpose of this study from Taiwan was to investigate the serum and urinary nerve growth factor (NGF) levels in overactive bladder (OAB) patients refractory to anti-muscarinic therapy. They concluded that increased serum and urinary NGF in patients with OAB syndrome who fail to respond to antimuscarinic therapy suggest that their bladder disorders might be caused by chronic inflammation. Increased circulating NGF levels might decrease the sensory threshold and result in overactive bladder symptoms.

Abstract #2177

CAN VIDEOURODYNAMIC STUDY PROVIDE PROGNOSTIC EVALUATION FOR INTERSTITIAL CYSTITIS/PAINFUL BLADDER SYNDROME?

Yuh-Chen Kuo, Hann-Chorng Kuo

The role of urodynamic studies in the diagnosis of interstitial cystitis/painful bladder syndrome (IC/PBS) remains inconclusive. The authors of this study from Taiwan therefore evaluated the correlations between videourodynamic (VUDS) parameters with clinical symptoms, potassium chloride (KCl) test, cystoscopic hydrodistension (HD) findings and treatment outcome in 214 patients with IC/PBS (30 men, 184 women). On the basis of their findings, they believe that the use of VUDS could be of value in diagnosis and prognostication for IC/PBS patients.

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