Novel treatment (new drug/intervention; established drug/procedure in new situation)

Caudal clonidine-bupivacaine block with bladder hydrodistension: a novel combined treatment for the painful bladder

Heidi Tempest,¹ Mark Stoneham,² Claire Frampton,² Jeremy Noble³

¹Department of Urology, Royal Berkshire Hospital, Reading, UK;

²Nuffield Department of Anaesthetics, John Radcliffe Hospital, Oxford, UK;

³Churchill Hospital, Oxford, UK

Correspondence to Heidi Tempest, htempest@hotmail.com

Summary

The authors describe a new combination procedure consisting of bladder hydrodistension with clonidine-bupivacaine caudal block for the symptomatic relief of bladder pain. They report this new technique whereby patients who had tried multiple forms of therapy with little response, including bladder hydrodistension under general anaesthesia for their chronic pelvic bladder pain, responded to this novel combination therapy.

BACKGROUND

Painful bladder syndrome/interstitial cystitis (PBS/IC) or bladder pain syndrome (BPS) is a chronic bladder disorder characterised by bladder pain and often with other associated lower urinary tract symptoms such as frequency or urgency.^{1 2} It is a diagnosis of exclusion and can be a challenge to treat. The aetiology is unknown, with multiple theories including defective bladder epithelium, an autoimmune response and neurogenic mechanisms.³

While the symptoms of frequency and urgency may be helped by treatments including behavioural therapies, anticholinergics and botulinum toxins, the symptom of bladder pain can be more of a challenge. It can be a very distressing symptom and many patients will seek several medical opinions and try multiple therapies to find a treatment which they respond to.

Current therapies available for bladder pain include behavioural therapies, oral and intravesical medication and even invasive surgery. Patients are often very keen to try all options of minimally invasive therapies.

One therapy is bladder hydrodistension, which is used in the treatment for PBS/IC but the response to this is variable and the effects are often short-lived.⁴ Methods of improving and prolonging this response have had little investigation but there are reports of repeated/ prolonged hydrodistension under epidural anaesthesia having a more prolonged effect.^{5 6} However, patients with an indwelling epidural catheter require inpatient stay. It would therefore be beneficial for this complex group of patients if simple day case methods of improving both the response rate and duration of bladder hydrodistension could be found.

The use of clonidine in the caudal space with local anaesthetics is well-described for the treatment of acute postoperative pain; however, to our knowledge its' use has not been previously described combined with bladder hydrodistension to treat bladder pain.

CASE PRESENTATION

A woman who had been diagnosed with BPS had tried multiple therapies for the very distressing symptoms of pain, frequency, urgency and nocturia. Previous therapies had included behavioural such as bladder retraining and oral medications including amitriptyline, gabapentin and pentosan polysulphate. She had also tried bladder hydrodistension alone and bladder instillation therapy such as sodium hyaluronate. All therapies had been without success.

TREATMENT

The patient was treated with the novel procedure of combined caudal clonidine-bupivacaine block with bladder hydrodistension.

This novel procedure is performed as a day case. A caudal epidural injection of a mixture of bupivacaine 0.25%, 10 ml with clonidine 150 mcg added is performed as a single-shot injection under aseptic conditions. General anaesthesia is then induced and a 5 min bladder hydrodistension performed. The hydrodistension consists of gravity filling the bladder at 70–100 cm H₂O with 0.9% normal saline to its capacity and maintaining for 5 min. The maximum anaesthetic capacity is determined whereby either the inflow backs up in the drip chamber or leakage occurs per urethra despite compression against the cystoscope. The bladder is then emptied and the patient goes home once they have recovered from the general anaesthetic.

OUTCOME AND FOLLOW-UP

The patient responded well to the combined procedure which lasted for 3 months. She commented saying there had been a 'vast improvement' both in her pain and lower urinary tract symptoms. She has had the procedure repeated on two more occasions with similar responses.

This new technique has also helped three other female patients all with similar histories.

These four patients were retrospectively analysed and assessed using the global response assessment,⁷ the International Prostate Symptom Score (IPPS) global quality of life question and the 1–10 pain scale. They all reported a global response rate of ‘markedly improved’, a reduction in IPPS bothersome score from ‘terrible’ to ‘pleased’ and a reduction in pain scores on the 1–10 analogue scale varying from 8–5. No adverse effects were reported. In these patients the response rate varied from 1 to 5 months. Two of the patients had a delay of response of up to 2 weeks.

DISCUSSION

We report a novel technique which involves combining two already well-known clinical techniques; a caudal clonidine-bupivacaine block together with bladder hydrodistension.

Clonidine, an α -2 adrenoceptor agonist with some activity at α -1 adrenoceptors and noradrenergic imidazoline receptors, has proved to be a clinically useful adjunct in general and regional anaesthesia as well as in chronic pain therapy. In pain management clonidine has been shown to have a synergistic effect with opioids, to prolong analgesia when added to local anaesthetics. Clonidine can also act as the sole analgesic when given by various routes of administration.

We do not fully understand why this combination therapy may be effective in this very difficult group of patients but believe that by combining the two therapies they may have a synergistic effect. Epidural administration of clonidine may relieve pain in painful bladder syndrome by stimulating the descending noradrenergic pain pathway, decreasing the discharge of C fibre afferents in the dorsal horn, inhibiting the release of substance P and suppressing the activity of wide dynamic range neurons.⁸ Repeated application of epidural clonidine may alter the plasticity of this nociceptive pathway and in effect facilitate the ‘resetting’ of the system, decreasing nociceptor impulses and increasing the duration of analgesia.

Caudal clonidine-bupivacaine block with hydrodistension is described here as a well tolerated and a potential

treatment for the relief of the debilitating symptom of bladder pain.

Our combination technique is minimally invasive and quick to perform. However this technique needs further study with prospective randomised trials before being widely undertaken as a new therapy.

Learning points

- Bladder pain in BPS can be a very difficult symptom to treat.
- There are multiple therapies available with varying successes for different patients.
- Combination therapy of caudal clonidine-bupivacaine block with bladder hydrodistension may help bladder pain in this condition.

Competing interests None.

Patient consent Not obtained.

REFERENCES

1. **Abrams P**, Cardozo L, Fall M, *et al.* The standardisation of terminology of lower urinary tract function: report from the Standardisation Sub-committee of the International Continence Society. *Neurourol Urodyn* 2002;**21**:167–78.
2. **van de Merwe JP**, Nordling J, Bouchelouche P, *et al.* Diagnostic criteria, classification, and nomenclature for painful bladder syndrome/interstitial cystitis: an ESSIC proposal. *Eur Urol* 2008;**53**:60–7.
3. **Sant GR**. Etiology, pathogenesis, and diagnosis of interstitial cystitis. *Rev Urol* 2002;**4**(Suppl 1):S9–15.
4. **Ottum DP**, Teichman JM. What is the value of cystoscopy with hydrodistension for interstitial cystitis? *Urology* 2005;**66**:494–9.
5. **Glemaire P**, Rivière C, Lenormand L, *et al.* Prolonged hydrodistention of the bladder for symptomatic treatment of interstitial cystitis: efficacy at 6 months and 1 year. *Eur Urol* 2002;**41**:79–84.
6. **Yamada T**, Murayama T, Andoh M. Adjuvant hydrodistension under epidural anesthesia for interstitial cystitis. *Int J Urol* 2003;**10**:463–8.
7. **Sant GR**, Probert KJ, Hanno PM, *et al.* Interstitial Cystitis Clinical Trials Group. A pilot clinical trial of oral pentosan polysulfate and oral hydroxyzine in patients with interstitial cystitis. *J Urol* 2003;**170**:810–5.
8. **Kulka PJ**, Tryba M, Zenz M. Alpha2-adrenoceptor agonists in chronic pain therapy. *Cur Opin Anaesthesiol* 1997;**10**:391–5.

This pdf has been created automatically from the final edited text and images.

Copyright 2011 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Please cite this article as follows (you will need to access the article online to obtain the date of publication).

Tempest H, Stoneham M, Frampton C, Noble J. Caudal clonidine-bupivacaine block with bladder hydrodistension: a novel combined treatment for the painful bladder. *BMJ Case Reports* 2011;**10**.1136/bcr.11.2010.3509, date of publication

Become a Fellow of BMJ Case Reports today and you can:

- Submit as many cases as you like
- Enjoy fast sympathetic peer review and rapid publication of accepted articles
- Access all the published articles
- Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow