Pharmacologic management of painful bladder syndrome/interstitial cystitis: a systematic review

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CRD summary
This review aimed to evaluate the efficacy of pharmacologic approaches to painful bladder syndrome/interstitial cystitis (PBS/IC). It concluded that pentosan polysulphate may be modestly beneficial for symptoms of PBS/IC, but there is insufficient evidence for other pharmacologic treatments. Though appropriately cautious, limitations in the reporting make it difficult to fully assess the reliability of these conclusions.

Authors' objectives
To evaluate the efficacy of pharmacologic approaches to painful bladder syndrome/interstitial cystitis (PBS/IC).

Searching
PubMed, EMBASE, CINAHL, HealthSTAR, Current Contents, Web of Science, PsycINFO, Science Citation Index and the Cochrane Library were searched from inception to 2007 for relevant publications; the search terms were reported. Additional studies were identified through searches of study bibliographies, reviews, monographs and the Interstitial Cystitis Task Force. The searches were limited to English language studies.

Study selection
Study designs of evaluations included in the review
Randomised, double-blind, parallel-group or crossover trials were eligible for inclusion in the review.

Specific interventions included in the review
Studies comparing pharmacological treatment for PBS/IC against placebo were eligible for inclusion. The specific interventions included: amitryptiline, antibiotics (type undefined), Bacille Calmette-Guerin, cimetidine, cyclosporine, dimethyl sulfoxide, hydrazine, L-arginine, oxybutinin, hyperbaric oxygen, pentosan polysulphate sodium, intravesical pentosan polysulphate and resiniferatoxin.

Participants included in the review
Studies including adults with PBS/IC were eligible for inclusion. Where reported, study populations were between 37% and 100% female and the mean age ranged from 41 to 65 years.

Outcomes assessed in the review
Studies measuring global status and/or individual PBS/IC symptoms were eligible for inclusion. Symptoms were scored on the O'Leary-Sant Interstitial Cystitis Symptom Index and the O'Leary-Sant Problem Index. The specific symptoms reported included pain, urinary urgency and urinary frequency, as well as global symptom improvement.

How were decisions on the relevance of primary studies made?
The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The authors did not state that they assessed validity. Some aspects of validity in selected studies were discussed in the results.

Data extraction
Two reviewers independently extracted the data. Data were extracted on study and patient characteristics, enrolment criteria, therapy allocation, adverse effects, outcomes and reasons for withdrawal.

Methods of synthesis
How were the studies combined?
Where possible, outcomes were converted into standardised mean differences. Trials of pentosan polysulphate sodium were statistically pooled using a random-effects model, using the dichotomous outcome of patient-reported global improvement with treatment. The remaining studies were combined in a narrative and their results represented in forest plots. Publication bias was assessed using Egger’s test.

How were differences between studies investigated?
Statistical heterogeneity among the pooled studies was assessed using the Q and I-squared statistics. Differences between other studies were discussed in the narrative synthesis.

Results of the review
Twenty-one randomised controlled trials (RCTs; n=1,470) were included in the review.

The mean frequency of global improvement was 19% (range: 4 to 40) in the control groups and 49% (range: 28 to 89) in the treatment groups. Effect sizes were generally small.

For oral pentosan polysulphate, 5 RCTs gave a pooled relative risk of 1.78 (95% confidence interval: 1.34, 2.35) for patient-reported improvement in symptoms. There was no evidence of statistical heterogeneity (Q=3.53; I-squared 0%; p=0.47) or publication bias (p=0.18).

For other treatments, few studies reported data on the same outcomes for the same specific agent.

Authors’ conclusions
Pentosan polysulphate may be modestly beneficial for symptoms of PBS/IC. There is insufficient evidence for other pharmacologic treatments.

CRD commentary
This review was reasonably well defined in terms of the participants, interventions, outcomes and study designs, and it attempted to find all relevant literature by searching multiple resources. However, only English language studies were included and it was unclear whether attempts were made to minimise bias and error when selecting studies for inclusion. Key data were extracted from the included studies and presented in the paper, but the narrative synthesis of these studies was brief, providing detailed discussion of some aspects of certain studies and not others. The meta-analysis of the subgroup of pentosan polysulphate sodium studies appears to have used appropriate methods, although it is not entirely clear why a dichotomous measure of improvement was used for this analysis when standardised mean differences were calculated elsewhere. Though appropriately cautious, such limitations in reporting make it difficult to fully assess the reliability of the authors’ conclusions.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that a consensus on standardised outcome measures is urgently needed, and that RCTs which use such standards should be conducted.

Funding
Supported in part by NIH/NIDDK grant RO1 DK 065990.

Bibliographic details

PubMedID
17923590
Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.