Meta-analysis showing the beneficial effect of alpha-blockers on ureteric stent discomfort

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CRD summary

This review found that alpha-adrenoceptor antagonists reduced stent-related pain and storage symptoms after placement of a ureteral stent. These initial results are likely to be reliable, but they were based on relatively few patients and there were some limitations in the methods; the authors suggested that further trials were necessary.

Authors' objectives

To evaluate the efficacy of alpha-adrenoceptor antagonists in improving symptoms for people with ureteral stents.

Searching

PubMed, EMBASE, CINAHL and The Cochrane Library were searched to 1st September 2010, with no language restrictions. A brief search strategy was reported, with the full strategy in an online appendix. Four pharmaceutical companies were approached for relevant unpublished data.

Study selection

Randomised controlled trials were eligible for inclusion if they compared the efficacy of alpha-adrenoceptor antagonists with standard treatment or placebo, for ureteral stent symptoms. Trials that had any standard indication for stenting, and reported any relevant outcome were included.

The trials were from Europe, the USA, and Asia. The two alpha-adrenoceptor antagonists studied were alfuzosin 10mg and tamsulosin 0.4mg. Most trials were placebo-controlled. Patients could take a range of other medications including quinolone, prulifloxacin, codeine, paracetamol or buprenorphine. In one trial, a third treatment group of 20 patients on tolterodine was not included. Treatment lasted from seven to 46 days. All trials reported a urinary symptom score and a body pain score, using the Ureteral Stent Symptom Questionnaire. The stents used, patient stones, where applicable, and other outcomes were reported in the review.

Two reviewers independently selected the trials and discrepancies were resolved by consensus.

Assessment of study quality

The Jadad scale was used to assess quality, giving a score out of five for randomisation, quality of randomisation, blinding, allocation concealment, and description of dropouts. Trials with dropouts were assessed for intention-to-treat analysis.

The authors did not state how many reviewers assessed the quality.

Data extraction

Data were extracted to calculate mean differences and relative risks, with 95% confidence intervals. When probabilities were not given in the original paper, the significance of proportional data was calculated using Fisher's exact test. Where relevant data were not clear, the reviewers contacted the authors for clarification. Outcome data were extracted at one week of treatment for all but one trial. In one trial the standard deviation of the outcome was not stated, and a standard deviation was derived using an upper bound on the estimated value.

The authors did not state how many reviewers extracted the data.

Methods of synthesis

Trial data were synthesised to produce pooled relative risks and mean differences. Confidence intervals were calculated using the Armitage and Berry method for differences in the means, and the Newcombe Wilson method for differences in proportions. Statistical heterogeneity was assessed using I^2 and publication bias was assessed using funnel plots. Secondary outcomes were reported in tables, but not synthesised.

Results of the review

Five trials, with 416 participants, were included in the review. The authors noted the possibility of publication bias. The Jadad score ranged from three to five; the one study with dropouts did not use intention-to-treat analysis.

The five trials found that alpha-adrenoceptor antagonists were associated with a reduction in the urinary symptom score (mean difference -8.4, 95% CI -11.1 to -5.6); there was significant heterogeneity (I^2=90.2%). They also found that the antagonists were associated with a reduction in the body pain score (mean difference -7.2, 95% CI -11.8 to -2.5), with significant heterogeneity (I^2=71.2%). In three trials (230 participants), they were associated with a lower proportion of patients reporting pain (RR 0.59, 95% CI 0.47 to 0.71; I^2=0).

Subgroup analyses by individual drug showed no difference between alfuzosin and tamsulosin.

Authors' conclusions

Alpha-adrenoceptor antagonists reduced discomfort and storage symptoms after placement of a ureteral stent.

CRD commentary

This review addressed a clear question and the search strategy was comprehensive. The authors made an effort to locate unpublished data. The funnel plots suggested publication bias, but the authors recognised that this was not a powerful test when using few studies. Steps were taken to reduce error and bias in study selection. The search was not affected by language bias. It was not clear whether data extraction and quality assessment were performed in duplicate. The lack of participant information means that the generalisability of the results is not clear. The meta-analysis was appropriate, but there was significant heterogeneity for some outcomes, which the authors could not explain.

In general, this was a thorough review, but the data extraction and quality assessment methods were not reported. The results were based on medium-to-high quality trials, and are likely to be reliable, but there were few trials and few participants.

Implications of the review for practice and research

Practice: The authors stated that urologists should consider prescribing an alpha-adrenoceptor antagonist when placing a ureteral stent to improve stent tolerance. Alpha-blockers were not licensed for this purpose and a negative pregnancy test and additional contraceptive advice were mandatory for women.

Research: The authors stated that a high-quality, placebo-controlled trial of alpha-adrenoceptor antagonists in patients with stents was required.

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