



NOVEL INTRA-COLONIC INFUSION OF THREE ANTI-PARASITE AGENTS FOR RESISTANT BLASTOCYSTIS HOMINIS INFECTIONS

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1. INTRODUCTION

- Blastocystis hominis (*Bh*) has been increasingly implicated as a gastrointestinal pathogen which can cause a variety of symptoms.
- Symptoms of *Bh* infection can include diarrhoea, abdominal pain, skin rash, constipation and fatigue¹.
- Anti-parasite therapies used for eradication of *Bh* include metronidazole, furazolidone, ciprofloxacin, tinidazole, secnidazole and iodoquinol².
- Due to its high resistance to metronidazole (40%), as well as other therapies such as a furazolidone (32%) and ciprofloxacin (100%), *Bh* is notoriously difficult to eradicate³. In addition to this, oral antibiotic therapy often leads to significant side effects.

- We report a prospective study in clinical practice using a novel method of delivery of a combination of anti-parasite antibiotics for the treatment of resistant *Bh* infection.

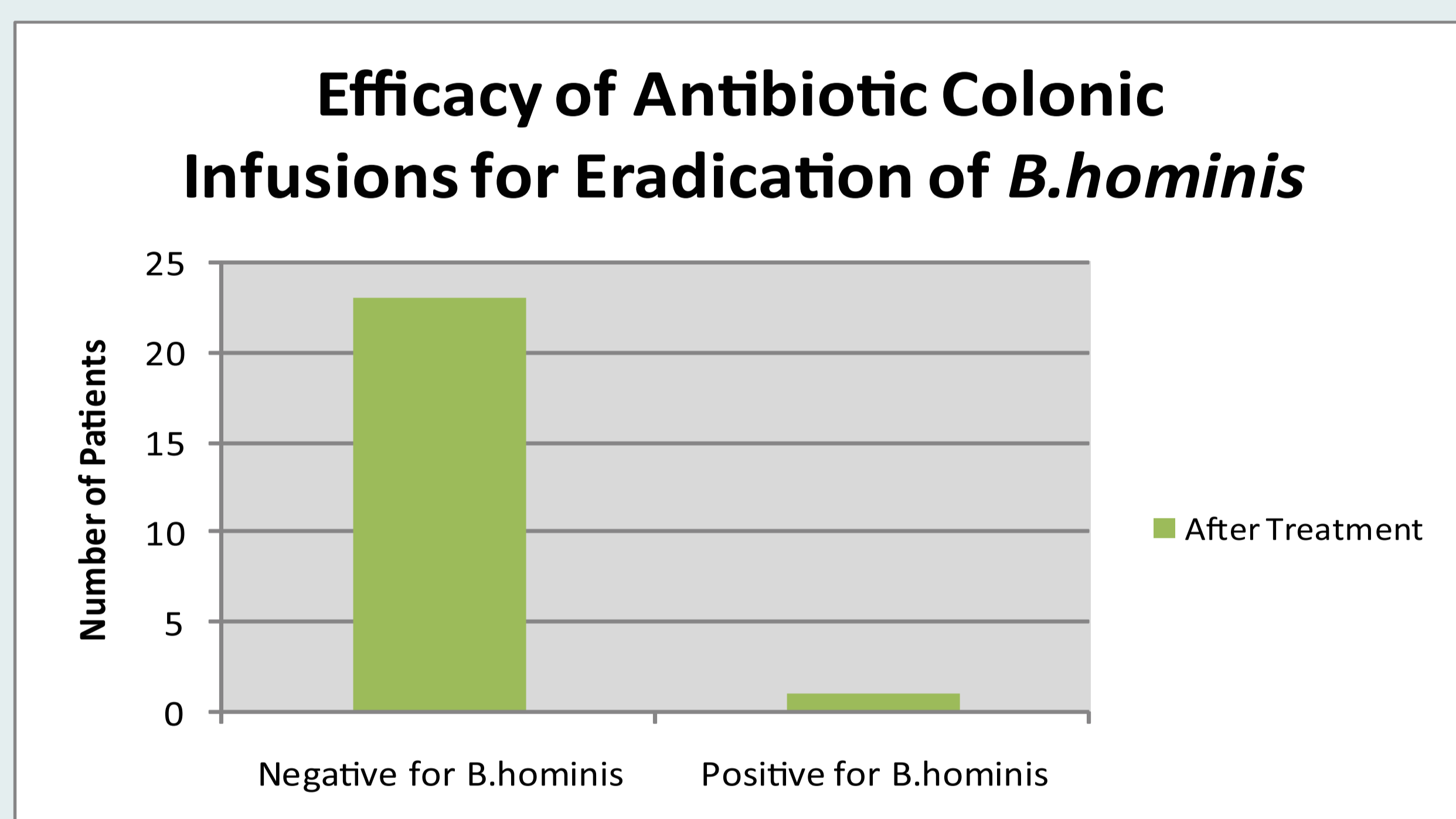
2. METHODS

Patients who failed to eradicate *Bh* infection using one of our standard protocols⁴ of oral triple therapy antibiotics were offered a novel triple antibiotic infusion consisting of nitazoxanide (3g), secnidazole (3.6g) and furazolidone (900mg) administered into the right colon and terminal ileum via colonoscopy after standard bowel preparation on day 1.

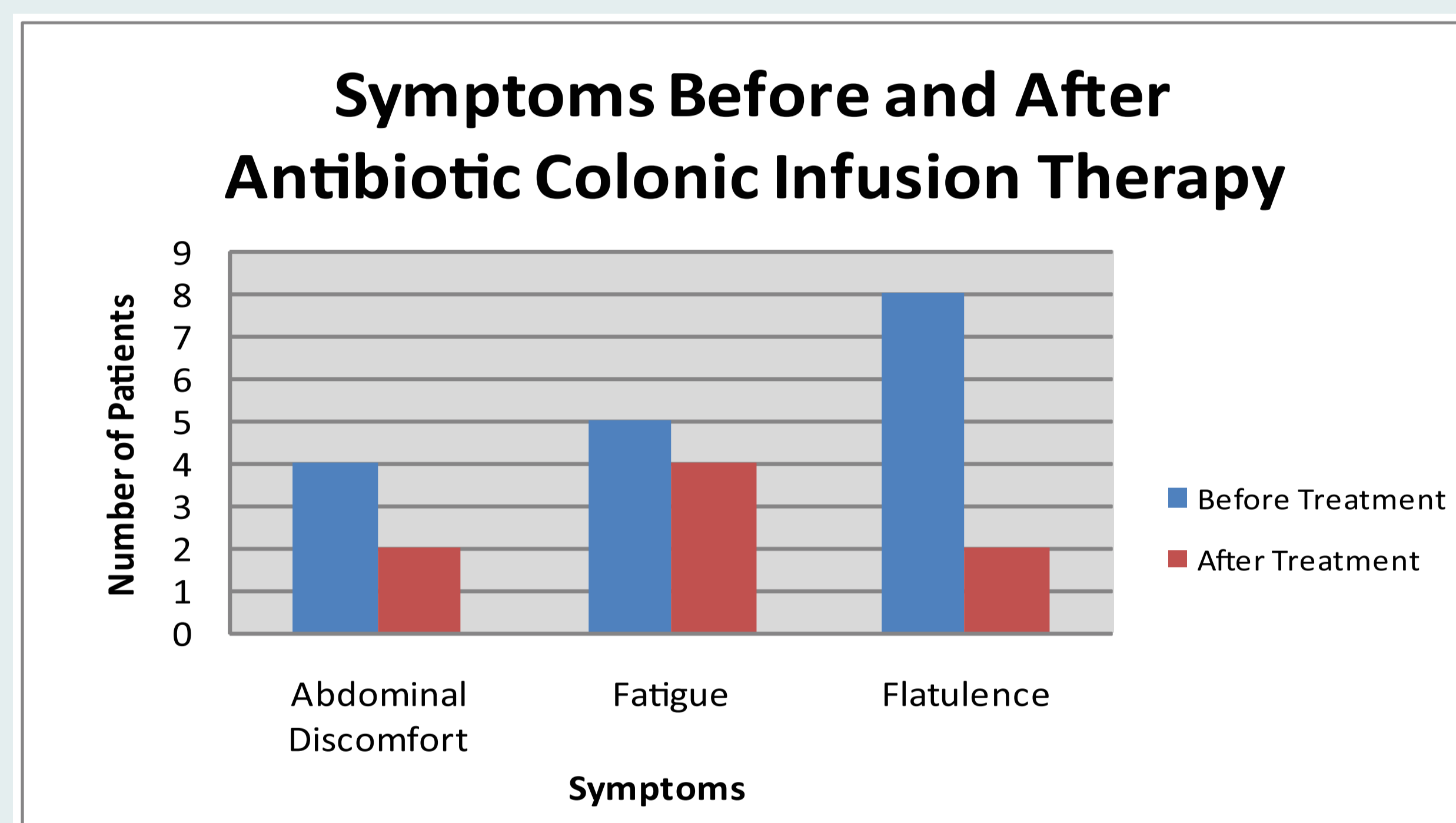
A second infusion using the same triple antibiotics was given via rectal enema the following day. Presence of *Bh* in patients prior to and 4 weeks after treatment was determined by examination of three stool samples.

3. RESULTS

24 patients (14F:11M; 22-73 yrs) who undertook the novel treatment were included in this prospective evaluation. The most frequent symptoms reported were abdominal discomfort (17/25), fatigue (9/24) and flatulence (9/24). 23/24 (96%) patients achieved cure with negative stool test confirmation. 14/24 patients did not return to the Centre for further treatment, of those that did, 4/10 had symptom resolution, 4/10 had other concomitant conditions, 2/10 returned with persisting symptoms, one of which remained positive for *Bh* post-treatment.



Graph 1. Efficacy of antibiotic colonic infusions for eradication of *B.hominis*.



Graph 2. Symptoms before and after antibiotic colonic infusion therapy.

| Side Effect | Number of Patients |
|----------------|--------------------|
| Nausea | 14 |
| Dizziness | 14 |
| Headache | 5 |
| Metallic Taste | 4 |

Table 1. Side effects experienced during antibiotic colonic infusion therapy. 9/24 patients did not experience any side effects.

Mild adverse effects were common but transient and included nausea/dizziness (14/24), headaches (5/24) and metallic taste (4/24), which is consistent with known effects of the treatment. Some patients experienced more than one side effect. 9/24 patients did not experience any side effects.

4. DISCUSSION

While *Bh*'s pathogenicity remains a point of controversy⁵, many symptomatic and asymptomatic *Bh*-infected patients are being treated with anti-parasite therapies; the most common anti-parasite treatment being metronidazole monotherapy⁶. It has been reported that *Bh* is highly resistant to metronidazole treatment with *Bh* cysts showing resistance at up to 5mg/ml metronidazole in vitro⁷. Due to this, treatment of *Bh* infection with metronidazole results in high eradication failure rates⁴. All 24 patients treated with antibiotic colonic infusions had previously failed oral antibiotic treatment. Of these patients, 96% experienced successful eradication of *Bh* after treatment with antibiotic enema. We hypothesise that direct local treatment of *Bh* infection in the colon may lead to higher eradication success.

In addition to high resistance, oral antibiotic therapy for *Bh* infections are often poorly tolerated. Nigro et al. reported side effects in 40/40 (100%) patients treated with 1.5g/day metronidazole for 10 days vs. 5/36 (14%) who received placebo⁸. Of patients treated with antibiotic colonic infusions only 15/24 (63%) experienced side effects, which were mild. Antibiotic infusions may increase tolerability and compliance due to its direct administration to the colon, which may reduce systemic absorption and hence the occurrence of side effects.

5. CONCLUSION

- Triple anti-parasite therapy using nitazoxanide, secnidazole and furazolidone as novel colonic infusions is an effective and well-tolerated method of eradicating *Bh* infection in patients who have failed oral therapy.
- Low incidence of side effects suggest that delivery of a high concentration of antibiotics directly to the colon reduces systemic absorption.
- High success of antibiotic infusion treatment of *Bh* suggests that the colon is the primary site of *Bh* colonisation.

REFERENCES

- (1) Boorom K et al. *Parasit Vectors*. 2008;1(1):40. (2) Kurt O et al. *Clin Microbiol Infect*. 2008;14:601-4. (3) Yakoob J et al. *Brit J Biomed Sc*. 2004;61(2):75-7. (4) Borody TJ et al. *Gut*. 2007;56 (Suppl III) A303. (5) Ok UZ et al. *Am J Gastroent*. 1999;94:3245-7. (6) Zierdt CH et al. *J Parasit*. 1995;81(1):127-9. (7) Zaman V and Zaki M. *Trop Med and Int Health*. 1996;1(5):677-8. (8) Nigro L et al. *J Travel Med*. 2003;10:128-30.

CONFLICT OF INTEREST STATEMENT

T J Borody has a pecuniary interest in the Centre for Digestive Diseases.