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Original Research Article

Prospective analysis of the management of small bowel obstruction using oral contrast agent at tertiary care hospital in western Rajasthan

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ABSTRACT

Background: Intestinal obstruction is a frequently seen entity in the Emergency Department that represents 25% of abdominal pain consultations.
Methods: This prospective, randomized, and clinical trial study was designed to determine the value of gastrografin in adhesive small bowel obstruction. The primary end points were the evaluation of the operative rate reduction and shortening the hospital stay after the use of gastrografin. A total of 100 patients were randomized into two groups: the control group received conventional treatment, whereas the study group received in addition of 100 ml gastrografin meal. Patients were followed up within 4 days after admission, and clinical and radiological (if needed) improvements were evaluated.
Results: Surgical procedure was performed in 10% of the gastrografin group for whom conservative treatment failed at the end of fourth day. In contrast, surgery was required in 28% of control group. These findings shows that gastrografin decreased the need for surgical management by 18%, but no statistically significant differences were observed. The length of hospital stay revealed a significant reduction from 4.60±1.14 days to 2.64±1.05 days for control and gastrografin groups, respectively.
Conclusions: The use of gastrografin in adhesive small bowel obstruction is safe and reduces the length of hospital stay.

Keywords: Abdominal surgery, Adhesion, Small bowel obstruction

INTRODUCTION

Intestinal obstruction is a frequently seen entity in the Emergency Department that represents 25% of abdominal pain consultations.[1] The most frequent causes of intestinal obstruction are postoperative adhesions followed by neoplasms and hernias.[2] The estimated rate of adhesions is around 94%–95% after laparotomy. It has recently been demonstrated that this rate is much lower in laparoscopic procedures, although the exact percentage is not known.[3] Before the 1990s, the mortality rate associated with intestinal obstruction was 30%–50%, depending on the series.[4] Nowadays, the correct diagnosis of symptoms and adequate treatment can lower the mortality rate to 3%-5%.[4–6]

During the management of intestinal obstruction, the patient should initially be made to fast and intravenous therapy should be administered, in addition to intestinal decompression with a nasogastric tube. Most of the symptoms will respond to conservative treatment. The indication for surgery is clear when there are data to suspect ischemia or intestinal suffering: fever, tachycardia, abdominal pain, peritonitis and acidosis. The problem lies in knowing how much time should pass before we decide whether the patient is responding to

conservative treatment and, therefore, when surgery should be indicated.

METHODS

It was a Hospital based prospective study carried out for 12 months (August 2016 to July 2017) at Dept. of Surgery, S.P.Medical College and P.B.M Hospital, Bikaner. A patient presents with clinical symptoms compatible with intestinal obstruction. Sample size was 100 patients (50 cases and 50 controls).

Sampling method

Convenience sampling

Inclusion criteria

A patient presents with clinical symptoms compatible with intestinal obstruction (symptoms and radiology compatible with obstruction and history of abdominal surgery with an interval of more than one month).

Exclusion criteria

Exclusion criteria were age <14 (because they sometime had congenital problems were relatively more complex and patients refer to pediatric surgeon); gestation; iodine allergy; previous radiotherapy; digestive vascular disease; early post-operative obstruction; incarcerated ventral hernia; large bowel obstruction; inflammatory bowel syndrome.

Data collection

All patients were treat initially by stopping oral feeding, nasogastric tube (NGT) decompression, and intravenous fluid resuscitation. The randomization was obtain through table of random numbers. Patients was divid into two groups (conventional and Gastrografin) to evaluate the effect of Gastrografin on adhesive small bowel obstruction regarding the success of conservative treatment and the need for surgery. One hundred milliliters Gastrografin® (Meglumin compound, Meglumin amidotrizoate®, *Darou Pakhsh Pharmaceutical Manufacturing Co*. Tehran, Iran) was administered through nasogastric tube. If a manifestation of strangulation was detected at admission, laparotomy was done and such patients will be exclude from the study. Gastrografin, 100 cc containing 37 mg iodine; once a day, and conventional treatment was given within 4 days after admission. However, treatment procedure was consider to be successful if any patient met the end point requirements. Otherwise, the patients who showed no progressive clinical and radiological improvement after 4 days, either in the group of patients who received Gastrografin or in the group solely managed by conservative treatment, underwent surgery. Parameters used to reach the end point of adhesive intestinal obstruction were clinical improvement (decreased pain, distension, passage of flatus and/or stool, normal intestinal sounds, stool in P/R examination and decreased amount of Ryle tube output) and radiological improvement. So, oral fluids was allowed and if tolerate, the amount was increased gradually, then semisolid, then solid diet.

RESULTS

The present study was undertaken to prospective analysis of the management of small bowel obstruction using oral contrast agent at tertiary care Hospital in Western Rajastha in Dept. of general Surgery, S.P. Medical College, Bikaner. This study was conducted on total 50 number of cases and 50 number of control.

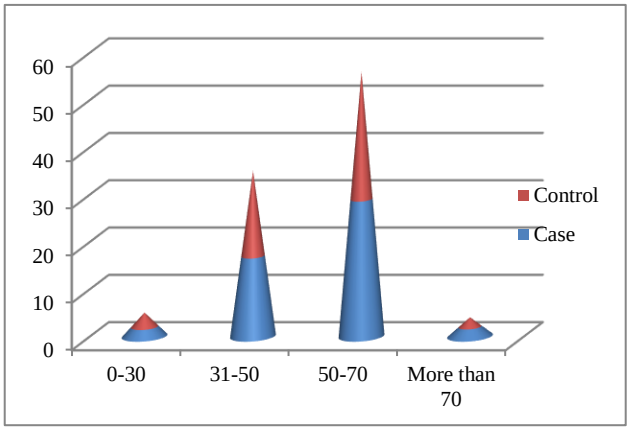

Figure 1: Age wise distribution of study population.

Average no. of previous surgery in per patients in cases 2.20 and control 2.11, it was statistically insignificants.

Table 1: No. of previous surgery wise distribution of study population.

No. of previous surgery	Case	Control	P value
Average no. of previous surgery	2.20	2.11	0.062

Table 2: Treatment wise distribution of study population.

Type of treatment	Case (%)	Control (%)	P value
Conservative treatment	45 (90)	36 (72)	0.71
Surgical treatment	5 (10)	14 (28)	0.69
Total	50 (100)	50 (100)	

Surgical procedure was performed in 10% of the gastrografin group for whom conservative treatment failed at the end of fourth day. In contrast, surgery was required in 28% of control group.

These findings showed that Gastrografin decreased the need for surgical management by 18%, but no statistically significant differences were observed.

Table 3: Hospital stay wise distribution of study population.

Variable	Case	Control	P value
Hospital stay (days)	2.64±1.05	4.60±1.14	0.001

The length of hospital stay revealed a significant reduction from 4.60 ± 1.14 days to 2.64 ± 1.05 days for control and Gastrografin groups, respectively.

DISCUSSION

Average no. of previous surgery in per patients in cases 2.20 and control 2.11, it was statistically insignificant in our study. Di Saverio et al and Farid et al found that same result.[7,8]

In current study, Gastrografin decreased the need for surgical management from 90% to 72% for patients in whom conservative treatment did not resolve obstruction after 4 days. It means gastrografin reduced the need for surgical management by 18% which is found similar to previous studies by Biondo et al, Di Saverio et al, and Assalia et al. This reduction was not statistically significant which is contradictory to previous studies by Biondo et al., Di Saverio et al, and Assalia et al.[7,9,10] So, the role of Gastrografin in the management of adhesive small bowel obstruction in terms of operative rate is still not clear and the results are controversial. These controversial results may be related to the differences between two groups of patients in our study compared with the previous studies. Another reason could probably be the patients' tendency to get surgery in order to reduce any possible side effects observed following adhesive small bowel obstruction in our university hospital.

The most frequent cause of acute small bowel obstruction is postoperative adhesion. Numerous attempts have been made to prevent postoperative adhesion, but till now no method has proven to be completely effective.[11] In the absence of strangulation, initial trial of conservative treatment is given to most patients.[12] Successful response to nonoperative treatment is reported to be 73–90%. A delay in surgical treatment may lead to an increased mortality rate, from 3% to 5% when the obstruction is simple to about 30% when it is strangulated or when the bowel becomes necrotic or perforated.[13]

In a randomized controlled study performed by Assalia et al, about 100 ml of Gastrografin was given on admission to patients in the study group.[14] A significant reduction in the need for operative treatment in the study group was reported.[15] Also, Biondo et al noticed that oral Gastrografin reduced the operative rate by 35% (11.4% in the Gastrografin group vs. 17.4% in the control group), increased the success of conservative treatment by 7% (88.6% in the Gastrografin group vs. 82.6% in the control group), and significantly reduced hospital stay by 52% (4.1 vs. 8.5 days).[9,16] Di Saverio et al noticed that oral Gastrografin significantly reduced the operative rate (18.5% in the Gastrografin group vs. 45% in the control group), reduced hospital stay by 59.8% (4.67 vs. 7.8 days), and shortened the time of resolution of obstruction (6.9 vs. 43 h).[9,16] In spite of these studies, in the meta-analysis by Abbas et al, water-soluble contrast agent did not reduce the need for surgical intervention, but reduced the length of hospital stay for patients who did not require surgery compared with placebo.[18,19] In a randomized study, no significant differences in the operative rate, incidence of bowel strangulation requiring resection, and readmission rate were found between the two groups. Instead the overall hospital stay was significantly shorter in the Gastrografin group (4.1 vs. 8.5 days) compared with control, as well as in both subgroups of patients who responded to conservative treatment or those surgically treated. The results observed from our study totally confirmed the data obtained in this study. Nevertheless, Feigin et al denied the therapeutic effect of Gastrografin and did not find any advantage with regard to operative rate, resolution symptoms, and hospital stay.[8]

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