

The Pattern of intestinal Obstruction at Kibogola Hospital, a Rural Hospital in Rwanda

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Background: Intestinal obstruction can be caused by many conditions that vary from country to country, from area to area within the same country and at different times. The outcome of management of the condition may be a good indicator of how well a country's surgical services are doing. The causes and the outcome of intestinal obstruction were studied in a rural Rwandan hospital.

Methods: This was a retrospective study from January 2003 to December 2007. Data analyzed from patients' records included age, sex, duration of symptoms, operative diagnosis, treatment and outcome of management.

Results: There were 105 patients with intestinal obstruction seen during the study under review. Males accounted for 72.4% of cases. The ages ranged from 1 month to 80 years with a mean of 31.8 years. The average duration of symptoms was 3.5 days. The leading cause of intestinal obstruction was obstructed/strangulated external hernias in 41 (39.0%) of patients and was followed by intussusception in 22 (21.0%). Adhesions were third with 18 (17.1%) patients. Sigmoid volvulus occurred in only 11 (10.5%) patients. Forty (38.1%) patients underwent intestinal resection and anastomosis. The hospital stay ranged between 1 and 36 days with a mean stay of 10.4 days. The overall mortality rate was 6.7%.

Conclusion: Good surgical services in the community could reduce the intestinal obstruction related mortality. External hernias could be electively repaired before they get obstructed.

Introduction

Intestinal obstruction is one of the commonest abdominal surgical emergencies. When intestinal obstruction is not relieved in time, the patient may die. Early diagnosis and prompt management are therefore mandatory. Several factors contribute to poor outcomes in the case of intestinal obstruction. Some of these determinants may include poor health seeking behavior, ignorance and poverty. Poor clinical judgment is also one of the negative factors leading to poor prognosis in case of intestinal obstruction.

Little is known about the spectrum of intestinal obstruction in our environment. About 15 years ago caeco-colic intussusception was the leading cause of intestinal obstruction in adult patients seen at Kibogora hospital¹. The pattern of intestinal obstruction is an indirect indicator of how well surgical services are developed in a certain region. Holcombe² compared the relative plethora of hernia and the paucity of adhesions to the high case mortality rate in Sierra Leone. Such a pattern of intestinal obstruction is seen in most of the countries which are not economically very prosperous. This study was undertaken in order to document the pattern of intestinal obstruction at Kibogora hospital, a rural district hospital in Rwanda.

Methods

This was a retrospective descriptive study from January 2003 to December 2007. The study was conducted at Kibogora hospital, a 250 beds missionary hospital in the southern part of the western Province of Rwanda. The data were retrieved from records of patients operated on for acute intestinal obstruction. Socio-demographics, duration of symptoms, preoperative diagnosis, operative findings,

procedure done, hospital stay and outcome were analyzed. SPSS 11.5 for Windows was used for data management.

Results

One hundred and five patients aged between 1month and 80years (mean age 31.8years) were operated on for intestinal obstruction during the study period. There were 76 males (72.4%) and 29 females (27.6%) and the M: F ratio was 2.6:1. There were three age peak incidences as shown on figure 1. Table 1 shows that eighty-two patients (78.1%) presented more than 24 hours after the onset of the symptoms. The average duration of symptoms was 3.5days (this ranged from 12hours up to 20days). Inguinal hernias were the leading cause of intestinal obstruction followed by intussusceptions. Adhesions occupied the third position. Two patients with obstructive adhesions were successfully treated non-operatively. Thirty eight patients had intestinal resection followed by intestinal anastomosis. The rate of intestinal resection was 36.2 %. The highest rates (more than 80%) of resection were observed in sigmoid volvulus, internal hernias, caecum volvulus and ileo-sigmoid knotting.

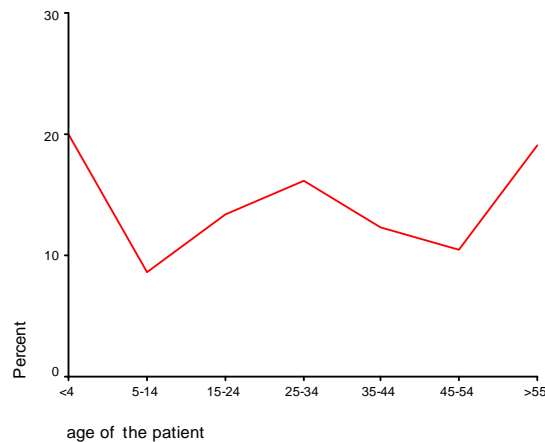


Figure 1. Age distribution

Table 1. Sex, duration of symptoms, aetiologies, resection rate and mortality

		No.	%	*R & A	%R & A	Mortality
Sex	Male	76	72.4	—	—	5 (4.76%)
	Female	29	27.6	—	—	2 (1.90%)
Duration of symptoms	< 24hours	33	21.9	—	—	1 (0.95%)
	>24hours	82	78.1	—	—	6 (5.7%)
Etiologies	Inguinal hernias	33	31.4	1	03.0	2 (1.90%)
	Intussusceptions	22	21.0	10	45.5	4 (3.80%)
	Adhesions	18	17.1	8	44.4	0
	Sigmoid volvulus	11	10.5	9	81.8	1 (0.95%)
	Internal hernias	6	5.7	5	83.3	0
	Femoral hernias	4	3.8	2	50.0	0
	Umbilical hernias	4	3.8	1	25.0	0
	Small bowel volvulus	3	2.9	2	66.7	0
	Ascaris lumbricoides	2	1.9	0	0.00	0
	Cecum volvulus	1	1.0	1	100	0
	Ilio-sigmoid knotting	1	1.0	1	100	0
Total		105	100	38	36.2	7(6.7%)

Key: R&A = Resection and Anastomosis

Table 2. Age vs outcome

Age	Discharged	Died	Total
< 4	18(85.7%)	3(14.3%)	21(100%)
5-14	9	0	9
15-24	13(92.9%)	1(7.1%)	14(100%)
25-34	17	0	17
35-44	13	0	13
45-54	11	0	11
>55	17(85.0%)	3(15.0%)	20(100%)
Total	98(93.3%)	7(6.7%)	105(100%)

P value >0.05

Six (5.7%) patients who died had reported more than 24hours after the onset of the symptoms. Only one (0.95%) patient died among those who reported before 24hours after the onset of the symptoms. The overall mortality rate was 6.7%. The duration of symptoms did not influence the outcome. Four (3.8%) patients who died had intussusceptions. These four represented 18.2% of the 22patients who had intussusceptions. Two patients who died had strangulated inguinal hernias and one patient had sigmoid volvulus (P >.05). Seven (6.7%) patients died postoperatively. Three patients who died were less than four years and the other three were 55 years old and above (Table 2). Age of the patients did not influence the outcome (P>.05). Six patients who died had reported more than 24hours after onset of the symptoms. The overall mortality rate from intestinal obstruction in this study was 6.7%. The duration of symptoms did not influence the outcome.

Discussion

The results show that external hernias altogether were the first cause of intestinal obstruction at Kibogora (39%) and inguinal hernias alone represented 31.4%. Intussusceptions were second followed by adhesions. Such a pattern is still found in many African countries especially in the rural regions^(5, 6, 7). Kibogora hospital is a rural missionary district hospital offering surgical services to the population dwelling in both districts of Nyamasheke and Rusizi. We agree with Holcombe¹ that such a pattern of intestinal obstruction with hernias in the lead is typical of regions where surgical services are still lagging behind. External hernias could be electively operated upon if the required surgical expertise was available in district hospitals. On the job training of district medical officers by surgeons from teaching hospitals may alleviate the burden of intestinal obstruction due to hernias.

About 80years ago, Mr. Hamilton Bailey⁽³⁾ used to say: “*The sun should not both rise and set on unrelieved case of intestinal obstruction*”. With early diagnosis and prompt appropriate management, most of patients suffering from intestinal obstruction can be saved. The situation is quite very different most of the time. Some patients come after subjecting themselves to relatively long periods of observation. They usually present to us when they really feel very sick. In this study the average duration of symptoms was 3.5 days with the maximum upwards to 20days. This is confirmed by many authors in Africa^(1, 4, 5).

Sometimes lack of good clinical judgment may complicate the situation. Patients with intussusceptions were often a diagnostic challenge for clinical officers and nurses who offer primary health care at the health centres. Such patients were first treated as infectious dysentery. Surgeons were only involved when there was failure of medical treatment or other complication. It is noteworthy to mention that all the patients must transit through health centres prior to be referred to the hospital. Without a referral note

patients may be denied the right to be supported by their community health insurance” *the Mutuelle de Santé*”. Very sick patients should be allowed to report directly to the hospital casualty departments without being penalized otherwise. This could reduce the unnecessary delays on acute surgical patients in health centres.

The majority of the patients reported more than 24hours after the onset of the symptoms. Several factors could explain this delay. Poverty, ignorance, poor road infrastructures and lack of transport means are some of the most important ones. Late presentation in case of intestinal obstruction accounts for disastrous outcomes, notably high rate of complications, long hospital stay and high mortality rates. In this study intestinal obstruction was common at both extremes of age. Another peak incidence was observed in the age group of 25-34 years. The mean age was 31.8 years and 81% were less than 55years old. Adesunkanmi also found a peak age incidence among elderly patients between 50 -80 years ⁽⁷⁾. Bowel obstruction can affect subjects of any age. In the western world intussusceptions is a typical cause of intestinal obstruction in children whereas it is a frequent happening in our adult population.

About fifteen years ago idiopathic adult coeco-colic intussusception was the leading cause of intestinal obstruction at Kibogora ⁽¹⁾. When you compare with the current results, there is an obvious change in the causes of intestinal obstruction at Kibogora. We attribute this trend to the political will to improve the sanitation by implementing water projects. In the past water from Lake Kivu was almost the sole water supply for the population dwelling around Lake Kivu. Cholera and other diarrheal diseases were common. Nowadays, the population has better access to clean water as compared to the situation 25years ago. This could explain a significant reduction in diarrheal infections in the community with consequent decrease of adult intussusceptions. The etiology is said to be unknown but more and more authors believe that the high rate of diarrheal infections with worm infestations may alter intestinal motility. This may explain the high rate of adult intussusceptions in economically destitute regions ^(8,9,10).

Elderly patients generally have a higher rate of colon cancer. In this study however there was no single case of malignant bowel obstruction. This is not very surprising as colon cancer is particularly rare in rural African setting as compared to the western world ^(5,6,7). The rates of intestinal obstruction caused by malignancy were 2.3% and 2.8%in Kumasi ⁽⁵⁾ and Nigeria⁽⁷⁾ respectfully. The M:F ratio of 2.6:1 was in keeping with findings from other studies from Ghana ⁽⁵⁾,Nigeria ^(7, 11), and India ⁽¹²⁾. There was male predominance with M:F ratios ranging from 1.5:1 to 4:1.

Kibogora hospital is a rural hospital and the majority of patients encountered there are mostly peasants. The commonest cause of intestinal obstruction was obstructed/strangulated external hernia. This is not surprising because very few hernias are actually being repaired on an elective basis. There are many reasons why people do not have elective hernia repairs. The medical expenses were deemed very high before the advent of the Mutuelle de santé, the community health insurance. As long as the hernia was not obstructed this was not top priority. It is also noteworthy to mention that absence of surgical expertise at the nearby hospital is a major barrier as well.

With the advent of the “mutuelle de santé”, there was a steep increase of the demand for hernia repair.

The surgical expertise at district hospital level did not change accordingly however.

When surgical services are improved hernias are electively repaired and other abdominal surgical conditions are managed appropriately. In this way the hernia lead pattern of intestinal obstruction is replaced by a western pattern of intestinal obstruction with adhesions as the leading cause. The adhesions develop in 6% to 11% of all patients undergoing laparotomy ⁽¹³⁾.

In the study by Wayne E. VanderKolk et al, adhesions accounted for 2% of all causes of intestinal obstruction at Kibogora hospital after intussusceptions (57%), external hernias(29%) and sigmoid volvulus(5%).⁽¹⁾ In this study however, adhesions accounted for 17.1% of all causes of intestinal obstruction. This changing pattern means that significant surgical work is being carried out at Kibogora hospital. This is also an encouraging sign that there must be promising economic growth in the region.

We found that large bowel obstruction was dominated by sigmoid volvulus. This is a frequent cause of intestinal obstruction in the African setup. Kotiso et al reported that sigmoid volvulus was the leading cause of intestinal obstruction in northern part of Ethiopia ⁽⁴⁾. Sigmoid volvulus is the leading cause of large bowel obstruction in most of the sub-Saharan region ^(4, 5). Internal hernias and bowel volvulus should always be thought of when patients, who have no prior history of laparotomy and no hernias, present with intestinal obstruction. In these situations, the risk of bowel gangrene is high and surgery should not be delayed ⁽¹⁴⁾.

Ascaris lumbricoides is a frequent cause of intestinal obstruction in children less than 5 years especially in resource-constrained countries. It is said that mass treatment with antihelminths significantly reduces the rate of ascaris associated intestinal obstruction ⁽¹⁴⁾. Adesunkanmi et al give figures which are not different from ours ⁽⁷⁾. Most reports from sub-Saharan Africa present similar results on less frequent causes of intestinal obstruction (caecal volvulus, ileo-sigmoid knotting). In our series, intestinal obstruction associated mortality rate was 6.7% and late presentation was invariably associated with morbidity. Mortality rates of 8.4%, 12% and 14% are reported by Adesunkanmi ⁽⁷⁾, Ohene-Yeboah ⁽⁵⁾ and Oladejo ⁽¹¹⁾ respectfully.

Conclusion and recommendations

- As external hernias continue to be the leading cause of intestinal obstruction, it is important that medical officers in district hospitals be trained at hernia repairing techniques. The Ministry of Health together with the teaching hospitals can provide such expertise by organizing on the job training of medical officers at hernia repairing techniques.
- The high rate of adult intussusceptions suggests that there is a need to improve more on sanitation measures as idiopathic adult intussusceptions are believed to be associated with diarrheal diseases. Mass treatment with antihelminths for children should be regularly organized.

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