

Penetrating abdominal war injuries among the war victims at Lacor Hospital in Gulu, Northern Uganda.

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A prospective study of patients presenting with penetrating abdominal war injuries over a 15-months period was carried out at Lacor Hospital mission hospital in Gulu town in Northern Uganda. Those with major concomitant injuries to the chest, central nervous and musculo-skeletal systems were excluded from the study. The patients' ages, sex, causative agent, organ injured, complications and outcome of management were recorded. Patients were followed up for a period of at least 4 weeks after discharge.

A total of 68 patients were seen during the period of study. The male to female sex ratio was 7.5:1. The patients' ages ranged from 2 to 50 years with a mean of 27 years. Gunshot wounds accounted for 58 (85.3%) of the cases while the remaining ten (14.7%) had injuries caused by bomb blast fragments. The organs most commonly injured were the small bowel, colon and liver. The morbidity rate was 36.8% all of whom had intestinal injuries. The overall mortality rate in this study was 14.5% mostly as result of haemorrhage and septicaemia. The high mortality rate associated with abdominal war injuries can be reduced if patients present early to hospital for prompt and appropriate treatment. All cases of such injuries should have exploratory laparotomy as soon as possible.

Introduction

Penetrating abdominal injuries among the war wounded present a challenge in its management especially in a situation with limited human and financial resources such as ours. It is associated with high morbidity and mortality. This is further complicated by the delay in bringing the patients to hospital with some arriving as late as the third day after sustaining the injuries. It was with such a background that this study was undertaken to determine the outcome of management of the war wounded in Lacor Hospital in Northern Uganda.

Patients and Methods.

A prospective study on patients presenting with penetrating abdominal war injuries over a 15-months period was carried out at Lacor 450-bed mission hospital in Gulu town in the Northern Uganda. Those with major concomitant injuries to the chest, central nervous and musculo-skeletal systems were excluded from the study. The patients' ages, sex, causative agent, organ injured, complications and outcome of management were recorded. Plain abdominal X-rays and ultrasonography were done selectively on patients with doubtful diagnosis.

Immediately on arrival to hospital, all patients were resuscitated with intravenous fluids soon after taking off blood for grouping and cross matching. A combination of penicillin and chloramphenical antibiotics was routinely

administered to all patients starting pre-operatively till the second postoperative day. In case of those patients with colonic injuries, the duration of antibiotic therapy was extended to 5 days and in addition to the two antibiotics they were given intravenous metronidazole. Tetanus toxoid was administered to all patients except for those who had been fully immunised. All patients suspected to have sustained penetrating abdominal injuries underwent mandatory laparotomy. Factors contributing to the postoperative morbidity other than the very minor ones were recorded. Patients were followed up for a period of at least 4 weeks after discharge.

Results

A total of 68 patients were seen. There were 60 males and 8 females. Their ages ranged from 2 to 50 years with a mean of 27 years. Fifty eight (85.3%) of the patients sustained gunshot wounds and ten (14.7%) had injuries caused by bomb blast fragments. There were no stab wounds. Thirty-two patients (47.0%) sustained multiple visceral or organ injuries, while 25 (36.8%) had injury to a single organ. Eleven (16.2%) had insignificant intra-abdominal injuries with omental prolapse, disruption of mesentery (with no bleeding) or retroperitoneal haematoma without any major structural damage. Ten of the 11 patients who sustained insignificant injuries had gunshot wounds with intra-abdominal retention of the with no exit wounds. The eleventh patient suffered an extensive abdominal wall injury caused by a bomb blast fragment. Table 1 shows the distribution of visceral injuries. The small intestine, colon and the liver were the most commonly injured organs. Small intestinal perforations were often multiple and were managed in the conventional way with resection and primary anastomosis. In one patient, the perforation was missed at surgery and was only discovered at re-laparotomy when the patient developed an intra-abdominal abscess.

There were 28 (41.2%) cases of colonic injuries of which 15 (53.6%) had a hemicolectomy done. Most of the latter had extensive damage to the caecum and transverse colon. Fifteen patients (22.0%) developed complications directly related to their original intra-abdominal injuries (Table 2). One patient presented with a low output fistula involving the descending colon, two weeks after sustaining the injury. There were 10 deaths (Table 3). The causes of death included haemorrhage, and septicaemia. One patient with sigmoid colon injury died of intractable diarrhoea after 4-weeks of hospitalisation. He had clinical features of HIV infection and was sero-positive.

Table 1. Site of Penetrating abdominal injuries.

Injured organ	No of patients	%
Small intestine	29	42.6
Colon	28	41.2
Liver	19	27.9
Kidney	6	8.8
Stomach	4	5.9
Gallbladder	4	5.9
Spleen	3	4.4
Diaphragm/lungs	2	2.9
Pancreas	1	1.5
Gravid uterus	1	1.5

Table 2. Causes of morbidity in penetrating abdominal injuries.

Complication	No of patients	%
Wound infection	10	14.7
Colostomy	10	14.7
Intra-abdominal abscess	4	5.9
Faecal fistula	1	1.5
Total	25	36.8

Table 3 Mortality Cases

Sex	Age	Pre-admission Duration	Site/organ	Post-operative Survival	Cause of Death
M	30	6 Hours	Ileum	7 days	Haemorrhage (Shock)
F	28	1 day	Ileum/ Rectum/ Uterus	3 days	Septicaemia
M	35	12 hours	Sigmoid colon	28 days	HIV infection
M	38	4 hours	Liver/ stomach/ kidney/ duodenum.	1 hour	Haemorrhage (Shock)
M	32	6 hours	Spleen/ kidney/ Sigmoid colon.	2 hours	Haemorrhage (Shock)
M	40	4 hours	Kidney/ pancreas/ Transverse colon.	2 hours	Haemorrhage (Shock)
M	31	3 days	Ileum	6 hours	Septicaemia
M	29	8 hours	Liver/ transverse colon/ Caecum / kidney	5 days	Septicaemia
M	29	10 hours	Transverse colon/ ileum	14 days	Septicaemia
M	30	8 hours	Transverse colon/ liver	6 hours	Haemorrhage (Shock)

Discussion

The diagnosis of penetrating abdominal injury is usually obvious. However, it is quite often associated with high morbidity and mortality. In many trauma centres, mandatory laparotomy is recommended for gunshot wounds of the abdomen irrespective of the clinical signs^{1,2,3}. The reason for this is that most patients sustain multiple visceral injuries, a fact which is borne out by this study. The other reason is that the initial examination may not be reliable. With a policy of mandatory surgery for all penetrating abdominal injuries in the war-wounded, the surgeon often discovers multiple visceral injuries. In this study, only eleven (16.2%) of the patients were found to have insignificant intra-abdominal injuries. *The common factor to all in this group is that they all had only the entry wounds with retained intra-abdominal bullets. This indicates that the missiles had expended most of its energy*

in flight and therefore in essence were low velocity injuries. According to some authors, such a group could probably benefit from conservative treatment after careful selection^{4,5}. However, in a situation where there is shortage of manpower and appropriate facilities for proper monitoring of such patients, it may not be advisable to follow such a course.

The majority of people affected were males in their third decade of life. This is expected because they form the bulk of active persons involved in civil strife. Similar findings have been noted elsewhere⁴.

The small intestine, colon and liver were the most commonly injured viscera. This is most likely due to the fact that these organs occupy large portions of the peritoneal cavity. The management of small intestinal injury is less controversial however; there

is controversy in the treatment of injury to the colon. In this study, most patients had extensive injury to the caecum, ascending colon and right side of transverse colon either singly or in combination. These groups were treated with right hemicolectomy. However, two patients with injury to the right side of the side of the transverse colon had primary anastomosis done on them. These two were found to have empty and relatively clean colon, probably they had not eaten high fibre for sometime. Fortunately, their recovery was uneventful. Ten patients were given temporary loop colostomy but none of them accepted the colostomy readily.

Wound infection occurred in ten patients seven of who had perforation of the colon in addition to other injuries, while the other three had perforation of the small intestines. The overall mortality rate in the present study was 14.7% which was comparable to previous studies by Bursch et al⁷ and Shannon and Moore⁸. One patient who found the colostomy so unacceptable pulled it out and in the process tore the mesenteric vessels. He bled to death. One patient with symptomatic HIV infection died of intractable diarrhoea attributed to opportunistic infections. Opinions are divided as to whether elective surgery should be performed in patients who are sero-positive for HIV infection. However, in an emergency situation, surgery should not be

withheld. Routine HIV-testing in emergency surgery has not gained general acceptance^{9,10,11}

In conclusion, penetrating abdominal injury is a major problem during civil strife. The nature of injuries sustained is often serious and exact enormous demands on the available limited financial resources. The injury carries a high morbidity and mortality. If the morbidity and mortality are to be reduced, prompt and efficient management of penetrating abdominal trauma is demanded.

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