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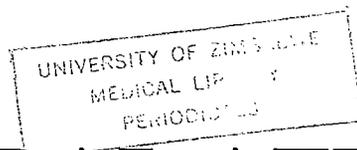
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# THE CENTRAL AFRICAN JOURNAL OF MEDICINE

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## ORIGINAL ARTICLES

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### Stab wounds in Bulawayo, Zimbabwe: a four year audit

GI MUGUTI, C ZISHIRI, M DUBE

#### SUMMARY

Between January 1989 and December 1992 a total of 102 patients (88 pc male and 12 pc female) were treated for stab wounds at Mpilo Central Hospital, Bulawayo, Zimbabwe. The case records of these patients have been studied retrospectively. The mean age of the patients was 30 years (Standard Deviation 9). Most of the patients, 82 pc (82/102) were residents of the city of Bulawayo with only 18 pc (18/102) coming from rural areas. The mean delay in presentation was 12 hours (SD 11).

A knife was the stabbing instrument in most cases (82 pc). Fights, 38 pc (26/68), domestic disputes, 26 pc (18/68) and robbery 21 pc (14/68) were the commonest motives for stabbing. In most cases stabbing occurred in a beer hall, 47 pc (26/55) and at home, 31 pc (17/55).

The majority of stab wounds occurred in the chest, 51 pc followed by the abdomen, 31 pc. Of the patients with stab wounds of the chest 22 pc (14/65) required intercostal chest drains. Of the 39 patients with stab wounds of the abdomen 20 patients were subjected to

laparotomy. No abnormality was found at operation in 50 pc (10/20) of cases.

No major complications or mortality were recorded in this series.

Based on the findings in this study, there is need for us to adopt a more conservative approach to the management of stab wounds, especially those involving the abdomen. This policy of "selective conservatism" should be based on a thorough physical examination and appropriate special investigations. Active surgical intervention should be reserved for specific indications.

#### INTRODUCTION

Outside South Africa the problem of stab wounds has not received much attention in the African medical literature. This problem has not been studied before in Zimbabwe.

From a review of the literature, supported by the material in this paper, it is clear, that most stab wounds affect the chest and abdomen. Clinicians should therefore be aware of the various management options of such injuries.

This study was carried out to determine the pattern of stab wounds in our practice and to analyse the results of our management of patients with such injuries. The relevant literature is reviewed and suggestions are made to bring our management of stab wounds in line with current management trends.

#### MATERIALS AND METHODS

Between January 1989 and December 1992 a total of 102 patients were treated for stab wounds at Mpilo Central Hospital. A retrospective analysis of their case records was carried out. The following information was extracted: age, sex, admission details, type of stabbing instrument, motive for stabbing, time of day,

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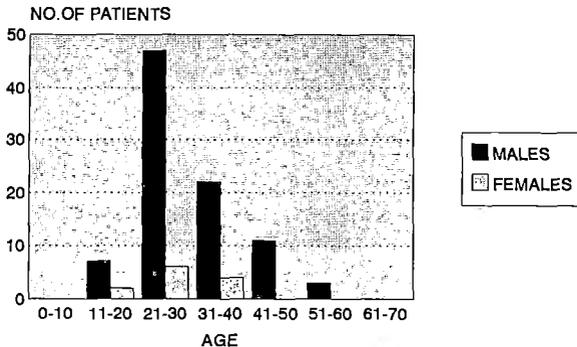
place of stabbing, anatomical site, clinical features, investigations, treatment, hospital stay and outcome.

**RESULTS**

**Age and sex distribution.**

The study included 90 (88 pc) males and 12 (12 pc) females). The mean age was 30 years (SD 9).

Figure I: Age and sex distribution.



**Admission details.**

Most of the patients, 84 (82 pc), were residents of the city of Bulawayo. Only 18 patients were from rural areas. The delay in presentation was known in 51 patients. The average delay was 12 hours (SD 11).

**Type of stabbing instrument.**

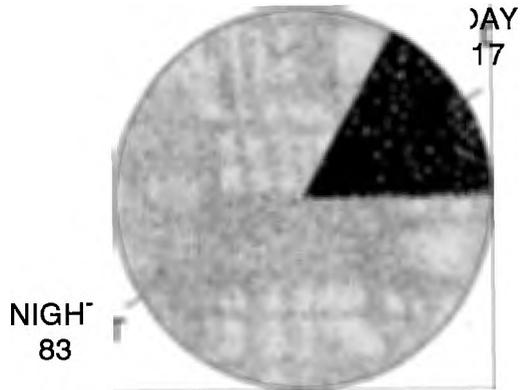
The type of stabbing instrument was known in 60 cases. In the majority of cases, 82 pc (49/60), a knife was used. The other stabbing instruments used included: a screwdriver 7 pc (4/60), some other sharp object 7 pc (4/60), a spear 2 pc (1/60), a pair of scissors 2 pc (1/60) and a needle 2 pc (1/60).

**Motive for stabbing and time of day.**

The motive for stabbing was known in 68 cases. Fights, 38 pc (26/68), domestic disputes, 26 pc (18/68) and robbery 21 pc (14/68) were the commonest motives for stabbing. The other motives included: assaults by unknown people, 8 pc (6/68), accidental injury, 4 pc (3/68) and attempted suicide in one case (1 pc).

Most of the stab wounds, 83 pc (71/86), occurred at night with only 17 pc (15/68) occurring during the day time. (Figure II). The time of day when stabbing occurred was not known in 16 cases.

Figure II: Stab wounds by time of day.



**Place of stabbing.**

In most of cases stabbing occurred in a beerhall, 47 pc (26/55) and at home, 31 pc (17/55). Stab wounds also occurred in the street, 16 pc (9/55), at the work place, 4 pc (2/55) and at school, 2 pc (1/55). The place of stabbing was not known in 47 cases.

**Anatomical site of stab wound.**

Multiple stab wounds (i.e. more than two) were recorded in 14 cases (14 pc). In the remaining 88 (86 pc) patients 127 stab wounds were recorded. In this group the majority of stab wounds occurred in the chest, 51 pc (65/127) and in the abdomen, 31 pc (39/127). The remainder occurred on the upper limbs 10 pc (13/127), the neck, 4 pc (5/127), the head, 2 pc (3/127) and the lower limbs 2 pc (2/127).

**Clinical features.**

Twenty eight pc (29/102) of the patients were drunk at the time of admission. The most common clinical features were: pain, 48 pc (49/102), active bleeding at the stab wound site, 21 pc (21/102) and local swelling, 17 pc (17/102). The other clinical features recorded were: difficulty in breathing, 8 pc (8/102), evisceration of the greater omentum, 5 pc (5/102), abdominal distension, 5 pc (5/102), peritonitis, 3 pc (3/102), shock, 3 pc (3/102), evisceration of bowel, 1 pc (1/102) and fever, 1 pc (1/102).

**Investigations.**

A chest X-ray was done in 69 cases. An abnormality was seen on chest X-ray in 22 pc (15/69) of cases. Haemopneumothorax observed in 14 pc (10/69) of cases was the commonest abnormality. The other ab-

Among the under privileged young adult urban men social altercations (64 pc in this series) are frequently resolved with knives or other handy weapons. Robbery as a motive for stabbing occurred in 21 pc of cases in this series. It is interesting to note that the majority of stab wounds in this study occurred at night (83 pc) and most commonly in a beerhall (47 pc).

In another study 66 pc of the patients were under the influence of alcohol at the time of injury.<sup>3</sup> It would appear from this observation that stabbing is a form of assault that assailants find easier to inflict on their victims under the influence of alcohol and under cover of darkness.

The investigations carried out among our patients included: chest X-rays, plain abdominal X-rays, urinalysis, haemoglobin and urea and electrolyte measurements. The most useful investigation was a chest X-ray in cases of stab wounds of the chest and anterior abdominal wall. An important abnormality was detected in 22 pc of cases. No abnormalities were detected in 25 patients in whom urea and electrolyte measurements were requested and also in 21 plain abdominal X-rays. These investigations should be requested only for specific indications. While a plain abdominal X-ray may be useful in cases of stab wounds of the back and flank (they may show retroperitoneal air suggestive of colonic damage) it is not very useful in cases of stab wounds of the anterior abdominal wall.

The clinical impression, despite public conception supported by the media, is that the lethality of stab wounds is quite low. In the Folsom Prison study (California, USA), the 3 pc mortality and 25 pc requiring a procedure beyond suturing reflects the low injury potential long clinically suspected in stab wounds.<sup>9</sup> This is the only study of its kind involving a closed population to accurately assess the overall morbidity and mortality of stab wounds.<sup>9</sup> In this study all the mortality was associated with major chest injury.<sup>9</sup> Other studies have also shown that mortality in stab wounds is mainly due to major chest injuries (i.e. injury to the heart and major vessels).<sup>1,10</sup> The mortality of non-cardiac penetrating chest wounds is about 0,4 pc.<sup>2</sup>

The benign nature of thoracic stab wounds in the present study is surprising considering the findings in other centres.<sup>1,10,11</sup> Because of our less sophisticated paramedical support and ambulance service it is possible that patients with very serious chest injuries involving the heart and major vessels are unlikely to reach the hospital alive. The long delay in presentation

(mean 12 hours) is also prejudicial to the outcome of patients with serious chest injuries. It is also possible that assailants in our community are not as vicious as those in much larger cities elsewhere in the world. Emergency room thoracotomy facilities are not available at our hospital. It is therefore unlikely that patients requiring such facilities would survive even if they made it to the hospital.

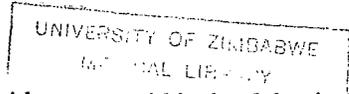
Stab wounds of the chest may be associated with a spectrum of injuries ranging from the lethal to the insignificant. An asymptomatic patient with a stab wound of the chest that is not precordial, not in proximity to the subclavian artery and not suspected of diaphragmatic penetration should be serially examined and have a follow up chest X-ray at six hours.<sup>7</sup> If the patient remains asymptomatic and the six hour film is normal, delayed complications are rarely, if ever, encountered and the patient does not require further investigations or hospitalization.<sup>7</sup>

In some patients thoracotomy may become necessary for the following indications.<sup>1</sup>

1. Massive bleeding (1L to 1,5L of blood on insertion of ICD) with persistent blood loss (200 mls/hour for three hours).
2. Bronchial injury (massive air leak).
3. Oesophageal injury.
4. Great vessel injury.
5. Significant retained or infected haemothorax.
6. Acute deterioration of the patient's condition.

In the present study intercostal chest drains were inserted in 22 pc of the patients with stab wounds of the chest. In one series up to 45 pc of patients with stab wounds of the chest required a chest drain.<sup>10</sup> During the course of this study intercostal drains were generally removed 24 to 48 hours after insertion, with a check chest X-ray and a short period of observation before discharge. None of our patients required a thoracotomy for evacuation of a haemothorax. It is important to note that any significant haemothorax not adequately drained should be evacuated at thoracotomy within seven days, as surgery after this time invariably entails some degree of decortication.<sup>1</sup>

Although the management of anterior abdominal wall stab wounds remains controversial there is overwhelming evidence from major centres supporting the policy of selective conservatism in the management of stab wounds of the anterior abdominal wall.<sup>3,5,6,10,12,13,14</sup>



Negative laparotomy is not an innocuous procedure with reported mortality rates ranging from zero to 6,3 pc<sup>4</sup> and morbidity rates 17 to 19 pc.<sup>4</sup> Mandatory laparotomy, therefore, is not a satisfactory method of management. The main aim of "selective conservatism" is to minimize the incidence of negative exploration of the abdomen without increasing morbidity from missed or delayed recognition of serious injuries.

Most reports suggest that a thorough initial physical examination and subsequent serial physical examination are the most reliable methods of evaluating patients with abdominal stab wounds for laparotomy.<sup>5,10,12,13,14</sup>

Other ancillary measures like peritoneal lavage and wound exploration should probably be reserved for the small group of patients in whom physical signs cannot be relied upon. Most reports using peritoneal lavage have agreed that the presence of faeces, bile, food material and bacteria seen on Gram's stain or more than 20 ml of gross blood returned define a "positive" lavage.<sup>5</sup> The main drawback of peritoneal lavage is that there is no agreement as to the exact values of red cell count in the lavage effluent that are indicative of intra-abdominal injury.<sup>12</sup> Injuries have been found from 1 000 to 100 000 cells/mm<sup>3</sup> in the lavage fluid.<sup>12</sup>

The following findings on initial examination of the patient have been suggested as indications for laparotomy.<sup>13</sup>

1. Peritonitis, or tenderness remote from the stab wound site.
2. Unexplained shock.
3. Evisceration.
4. Gross blood from an orifice.
5. Retained stabbing implement.
6. Radiographic studies suggestive of visceral injury (e.g. gas under the diaphragm, extravasation of contrast material on intravenous pyelogram).

Mandatory laparotomy seems a sensible approach to the management of patients with evisceration of bowel. However, the management of the patient with evisceration of the omentum remains controversial. In one South African study only 14 of 26 patients (54 pc) with only omental evisceration had serious intra-abdominal injury.<sup>13</sup> Similar observations have also been made by other workers.<sup>10</sup> In patients with eviscerated omentum and an otherwise unremarkable examination following an anterior abdominal wall stab wound other workers have safely managed such cases by omental replace-

ment within the abdominal cavity.<sup>6</sup> However, in cases of omental evisceration above the subcostal margin a laparotomy is necessary for repair of diaphragmatic perforation.<sup>14</sup>

In the present study out of 39 patients with abdominal wall stab wounds 19 (50 pc) were successfully managed conservatively. The remaining 20 patients (50 pc) underwent exploratory laparotomy. No significant injury was found at laparotomy in 50 pc (10/20) of cases. In the light of experience from major trauma centres there is a need for us to reduce our rate of unnecessary laparotomies by following more stringent criteria for abdominal exploration in cases of anterior abdominal wall stab wounds. Because of the chronic shortage of skilled manpower in our set up it is essential that all patients in whom the indications for exploratory laparotomy are not clear cut be assessed by the most experienced member of the team.

If the decision to manage the patient conservatively is taken then serial physical examination at regular intervals (e.g. four hourly) is essential to avoid missing serious injuries that may become obvious during the observation period. In centres practising "selective conservatism" unnecessary laparotomies have been reduced to between 10 pc and 21 pc.<sup>10,12,13,14</sup>

In conclusion, selective conservatism based on a thorough physical examination and appropriate special investigations appears to be the preferred approach to the management of stab wounds of the chest and abdomen. Active surgical intervention should be reserved for specific indications.

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