

## **A study of stab wounds**

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### **SUMMARY**

A study was made of patients with stab wounds who attended the Accident and Emergency Department of Glasgow Royal Infirmary during 1978 and 1983. There were 318 patients. The majority, 304 (96%), were males. A total of 87 (27%) were teenagers. The most common sites of the wounds were the chest (143 patients) and the abdomen (113 patients). The features of the patients and their wounds are compared with those of a previous study carried out at the same hospital in the early 1960s (Batey & MacBain, 1967). The post-mortem reports of 25 fatal stab injury cases occurring in Glasgow between 1971 and 1978 are also reviewed. Some aspects of diagnosis, management and prevention of stab wounds are discussed.

### **INTRODUCTION**

The incidence of stabbing in the east end of Glasgow was previously studied in the early 1960s by Batey & MacBain (1967). They showed that the incidence of patients admitted to Glasgow Royal Infirmary with stab wounds had increased between 1962 and 1965 and that 40% of victims were teenagers. In February 1981 the Criminal Justice (Scotland) Act 1980 was introduced. This extended the powers of the Scottish Police to search for offensive weapons. In spite of this, the use of knives in serious crimes of violence in the east end of Glasgow increased from 16% in 1978 to 23% in 1983. Although the gangs of the 1960s to whom much of the stabbing had been attributed no longer gained so much publicity in the 1970s, our impression was that patients with stab wounds still came to the Accident and Emergency Department of the Glasgow Royal Infirmary in sufficient numbers to warrant further study.

METHOD

A record was made of the features and initial management of all patients with stab wounds presenting to the accident and emergency department during the years 1978 and 1983. In addition, we examined the post-mortem reports of 25 fatal stab injury cases which had occurred in Glasgow between 1971 and 1978.

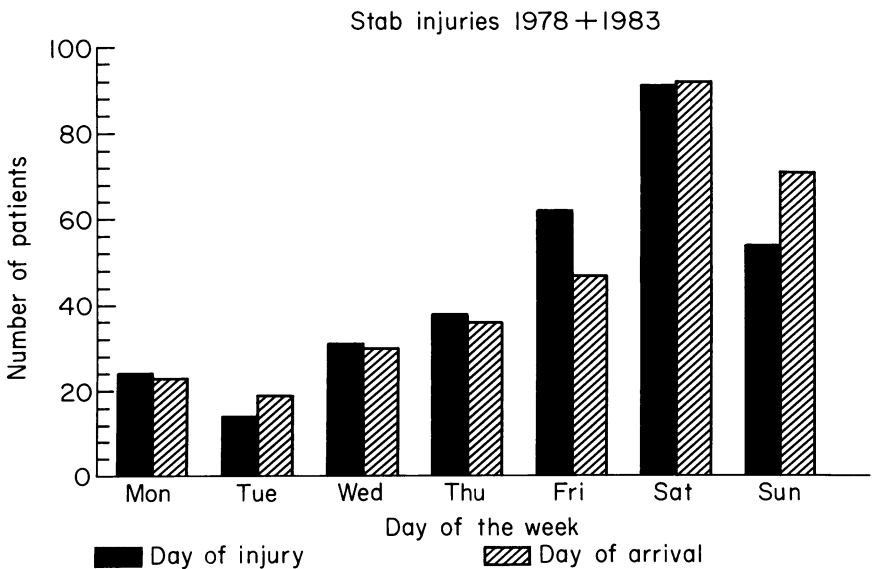
RESULTS

*Patients*

There were 318 stabbed patients—142 in 1978 and 176 in 1983. They represented about 3% of assaults and only 0.3% of all trauma cases arriving at the accident and emergency department. A total of 304 were male and 14 female. The group most at risk was young men in their twenties. There were 87 (27%) teenagers.

Injuries were sustained most often on Friday and Saturday (Fig. 1). However, as the stabbing commonly took place late in the evening and there was usually a delay between injury and arrival at the accident and emergency department (of at least one hour), the histogram for the day of arrival shows a different pattern from that for the day of injury. Thus more patients arrive on a Sunday than on a Friday due to the relatively large numbers arriving in the early hours of Sunday morning.

A few patients had incurred accidental or intentional self-inflicted wounds but the



**Fig. 1** The daily variation in the incidence of stabbing and the arrival of patients at the accident and emergency department.

majority were assaults. In 1978 it was possible to gain further information from the police. A total of 104 (73%) of the patients claimed to be innocent victims of assault but only 77 (54%) of the cases were reported to the police. A total of 87 patients (61%) had criminal records, and 23 (16%) had a record for serious assault. Two patients refused admission and 15 of the 97 patients who were admitted took their own discharge against the doctor's advice. Of those requested to attend the out-patient clinic 40% failed to do so.

Details of assailants were recorded in 106 cases of assault in 1983. In 40 cases (38%) the assailant(s) were teenagers and in 29 of these two or more were involved. In 19 assaults (18%) the victims were stabbed by people over the age of 30 years, but in only four of these was there more than one assailant.

### *Weapons and skin wounds*

In 225 cases (71%) the weapon was known. Knives were most commonly used but all sorts of implements, including steel combs and swords, were thrust into victims. It is therefore not surprising that the length of the skin wounds varied widely and that there was no simple relationship to be found between the length of the wound and the severity of the injury. Most of the penetrating trunk injuries had skin wounds between 1 cm and 3 cm in length, but some were as long as 6 cm.

Most patients were stabbed only once but it was not unusual to find patients with several wounds in different parts of the body (Table 1). A total of 410 wounds (69%) involved the trunk, i.e. the chest or abdomen. While the wounds on the front of the trunk were evenly distributed between both sides, in fatal stab wounds they were noticeably more common on the left side (Table 2).

**Table 1** Site of wounds

Site	%	Number of stabbings
Chest	45	143
Abdomen	36	113
Limbs	33	106
Head & neck	15	47
Buttock	5	17

*n* = 318, the total number of stabbed patients

**Table 2** Site of fatal stab wounds 1971-78

Site	Right	Left	Mid-line or multiple bilateral
Front of chest	4	6	2
Front of abdomen	1	3	4
Back	1	1	1
Front of neck	1	0	1

### *Chest injuries*

The chest was the most common site of injury. Of the 143 patients with chest wounds, 27 were not admitted and eight of these did not have a chest x-ray prior to dismissal. A total of 40 patients had a pneumo- or haemothorax. Most of those with complications were managed by insertion of a chest drain and/or by observation. Eight patients underwent thoracotomy and seven laparotomy and each operation confirmed active bleeding or penetration of a viscus. Two patients with a haemopericardium died, one of whom was dead on arrival. One elderly man with ischaemic heart disease died during an emergency thoracotomy for a haemopneumothorax.

### *Abdominal injuries*

The second most common site of injury was the abdomen. Of the 113 patients with abdominal wounds 95 were admitted. A total of 44 had laparotomies and 12 revealed no intra-abdominal injury requiring haemostasis, repair or drainage. One patient had suffered a transection of the superior mesenteric vessels and pancreas. In spite of multiple blood transfusions he died. Of the 51 patients who were managed by observation or wound exploration 23 had wounds of the flank or back. Of the 18 patients who were not admitted four had back wounds and five refused treatment. One ran away and jumped into the River Clyde!

### *Wounds involving multiple areas*

In six cases a wound in the chest caused damage to an abdominal viscus and in another a wound of the lumbar region had penetrated upwards to produce a pneumothorax.

### *Other injuries*

Limb wounds were present in 106 (33%) of the patients and, although these were rarely associated with life-threatening complications, nerve and tendon injuries were particularly disabling. The head and neck were less frequently injured but there were several severe injuries resulting in the partial division of an internal jugular vein, loss of an eye, and division of a facial nerve.

## **Incidence and severity of injury**

The number of stab injury victims presenting to our accident and emergency department has increased from 142 in 1978 to 176 in 1983 (24% increase). The police statistics for the same catchment area reveal that serious crimes of violence involving the use of a knife have risen by 22% during this time.

The measurement of the number of injured intrathoracic and abdominal visceral organs has allowed the comparison of the incidence of severe stab injuries during the past two decades (Table 3). This is a more reliable guide to the rising incidence than comparing numbers admitted as the criteria for admission of stab-injured patients to the Glasgow Royal Infirmary may have changed during these years.

**Table 3** Compares the average annual incidence of serious, penetrating intrathoracic and intra-abdominal lesions in the 1962–65 study with the incidence in our 1978 and 1983 studies

	Penetrating trunk wounds		
	1962/65	1978	1983
Chest lesions	48%	45%	43%
Abdominal lesions	52%	55%	57%
Total	23	40	54

### Fatal injuries

The review of 25 fatal injuries revealed that seven were caused by wounds that tracked from one area of the body to another. Four had penetrated the diaphragm. One neck wound resulted in bilateral haemothoraces. One right-sided chest wound caused a left-sided haemothorax. One wound beginning at the left sixth costal cartilage had penetrated both ventricles, the left atrium, aorta and the oesophagus.

### DISCUSSION

It is apparent that the phenomenon of stabbing in the east end of Glasgow is more prevalent in 1983 than it was in the 1960s. The incidence of penetrating wounds of the trunk doubled and during the 5 years to 1983 increased by over a third (Table 3).

The stab wound is no respecter of anatomical barriers and presents a difficult diagnostic and therapeutic challenge. While only 1% of our cases proved fatal the review of another 25 autopsies revealed that almost half of these fatalities did not reach hospital alive. The most severe life-threatening injuries resulted mainly from anterior wounds to the chest and upper abdominal wall. For most of those patients who reached hospital the severity of the injury was immediately obvious but some patients presented to the Casualty Officer with minimal signs of abdominal or thoracic cavity injury and it was only some hours later that peritonism or hypotension became apparent. Wound exploration under local anaesthesia is of limited diagnostic value although it may be useful in some anterior chest wounds (Garcia-Rinaldi *et al.*, 1977). Probing is very dangerous as a 'negative result' may lead to a false sense of security. It is wise to admit all patients with wounds of the neck and trunk if subcutaneous fat has been entered. The use of peritoneal lavage may help to clarify the question of intra-abdominal injury in doubtful cases and could reduce the negative laparotomy rate, hopefully without increasing morbidity (Thal, 1977). In cases of suspected intrathoracic injury the initial normal chest x-ray film, particularly if supine, can be misleading (McLatchie *et al.*, 1980) and a further erect chest film about 6–12 hours later is advisable. If there is any doubt in the initial film about widening of the mediastinum repeated films at much shorter intervals are advisable and the use of ultrasound may be of value (Garcia-Rinaldi *et al.*, 1977). In addition to and more valuable than all of these investigations is repeated, frequent examination by an experienced clinician. However, this is not always

practicable, particularly in the early hours of the morning.

It is clear that stabbing is becoming more frequent in certain areas of the United Kingdom (Lambrianides, 1984) and if preventative measures are not effective then we must be prepared to meet the challenging diagnostic and therapeutic problems which it presents.

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