Audit

The impact of violent injuries on an NHS plastic surgery unit

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Background: Violence and injuries caused by violence appear to be increasing.

Patients and Methods: A prospective study of violent injuries treated in our unit.

Results: Over a 5-month period, 148 (21%) of 704 acute admission patients aged 14 years or more and 11 children had injuries due to violence. The head, neck and hands were the commonest sites of injury. Of the 148 patients, 144 (91%) underwent surgery for their injuries.

Conclusions: Injuries due to violence have a significant effect on the resources of our NHS hospital and probably of all NHS hospitals with acute surgical services.

Key words: Violence – Injuries – Plastic surgery

Victims of violence, including National Health Service (NHS) staff, are painfully aware of the direct effects of personal injuries due to violence. There are many studies on the nature of these injuries and their treatment. Less well documented are the indirect effects of violent injuries, for example their effects on healthcare resources. It was our impression that a significant proportion of acute admissions to our unit were for the treatment of injuries due to violence. Therefore, we carried out a prospective study of patients admitted with injuries sustained through violence.

Patients and methods

Our unit receives acute admissions from our hospital and three other district general hospitals, serving a total population of about 1.5 million people. Over a period of 5 months (February–July 2001), details of all patients who

had injuries due to violence were recorded. These included injury as a result of assault or unintentional self-inflicted injuries through violent behaviour (e.g. punching glass). Injuries caused by intentional self-harm (e.g. multiple wrist lacerations) were excluded.

Results

Over the 5-month period, 704 patients aged 14 years or more were admitted as emergency cases; of these, 148 (21%) patients had injuries caused by violence. In addition, 11 children required in-patient treatment for violent injuries.

Of the 159 patients, 132 were male and 27 female (male:female ratio, 4.9:1) with a mean age of 25 years (range, 1–56 years). Seventy-one patients (45%) were admitted on a Saturday or Sunday and 76 adults (51%) said they had drunk alcohol before being injured.

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Figure 1 Mechanisms/weapons of injury.

Assault by another person was the cause of injury in 124 (78%) cases, while 35 (22%) patients injured themselves through violence, 26 (74%) of them by punching glass.

Of those assaulted, 70 (56%) were attacked with a weapon – for example, glass ($n = 29$, 41%), knives/blades ($n = 19$, 27%), and firearms ($n = 5$, 7%) (Fig. 1). Knives used included kitchen knives, machetes ($n = 2$) and a Samurai sword. The firearms were air-rifles ($n = 4$) and a shotgun ($n = 1$). Fifty-four (44%) patients suffered unarmed assault (punch/kick/head-butt; $n = 38$, 70%) or human bite ($n = 17$, 31%).

Sites of injury included the head and neck ($n = 84$, 53%), hands ($n = 54$, 34%) and other parts of the upper limb ($n = 19$, 12%) (Fig. 2). Of the 54 patients with hand injuries, 19 had extensor tendon injuries, 11 had flexor tendon injuries, 7 had nerve injuries, and 6 had infections caused by punching someone else in the mouth. Only 2 patients in this series had fractures of the hand.

Surgery was considered necessary for 151 (95%) cases and was carried out in 144 (91%) cases; 7 patients discharged themselves against medical advice before surgery.

Patients remained in hospital for a total of 287 days (mean, 1.8 days per patient). Follow-up by the plastic surgery team was required in 132 (83%) cases.

Figure 2 Anatomical sites of injury.

Discussion

Criminal violence is increasing in England and Wales. Serious assaults (wounding) increased from 98,021 cases in 1987 to 239,326 in 1997.¹

The majority of violent offenders are young males. Most of the victims of violence in our study were young males. We do not know how many of these victims of violence were also offenders.

The majority of our adult patients (51%) admitted to drinking alcohol before being injured. Drinking alcohol is not only a risk factor for violent behaviour,^{1,2} but it also increases the risk of becoming a victim of assault. One study in Bristol of the victims of assault showed that those who had drunk more than 10 units of alcohol in the 6 h before the assault tended to have more severe injuries than those who had drunk less or had not drunk alcohol (one unit of alcohol = 0.5 pints of beer/lager, 1 single measure of spirits, 1 glass of wine).³ In addition, multiple injuries were more likely in those who had drunk alcohol.

The commonest sites of injury in our patients were the head and neck (53% of patients) and hands (34% of patients). One possible reason for this could be the pattern of referrals to our unit. However, it is probably because these are the commonest sites of injury in assault victims. For example, in 225 consecutive victims of assault attending one accident and emergency department from March 1984 to March 1985, 72% of males and 57% of females had facial injuries; overall, head and neck injuries were the commonest injuries and upper limb injuries were the next largest group.⁴

Referral patterns do explain why very few simple hand fractures were treated in our unit. One of the most common fractures of the hand is a closed fracture of the neck of the little finger metacarpal, caused by punching someone or a solid object such as a wall.⁵ Most of these fractures can be treated non-operatively in the accident and emergency and orthopaedic departments.

In our study of injuries caused by violence, we included injuries caused by the less well-known activity of punching glass. Over the 5-month period, 26 patients admitted this as the cause of their injuries; 23 (88%) were male with an average age of 24 years. Eleven (42%) admitted to having drunk alcohol before the injury. An earlier prospective study over 12 months by Irwin *et al.* recorded 35 cases of injuries caused by punching glass; 28 patients admitted to having deliberately aimed a punch at the glass, while 7 patients missed their intended target and punched glass instead.⁶ In two cases, the injuries were caused by punching a beer glass. Irwin *et al.* described the typical person involved as being a young unemployed man who had consumed considerable quantities of alcohol.

Violent injuries add to the workload of many NHS hospital specialties. In one inner city accident and emergency department, the number of patients attending

with injuries caused by violence increased by 50% from 1987 to 1990.⁷ Facial fractures treated by maxillofacial, ENT and plastic surgeons are most commonly caused by violence. Our prospective study adds further data to show the significant effect of violent injuries on NHS hospitals.

The causes of violence have been extensively studied by criminologists and others.¹ They include hyperactivity, impulsiveness, low intelligence, low school attainment, harsh physical punishment by parents, child physical abuse, large family size, peer delinquency, low socioeconomic status, urban residence and living in a high-crime neighbourhood. Additional factors include alcohol and other drugs.²

Many studies, including large, randomised, long-term experiments, have shown that prevention programmes, e.g. by increasing family support, parental training, and pre-school education, can reduce crime in general and probably violent crimes as well.¹ Several economic analyses have shown that the benefits of some of these prevention programmes outweigh their costs.

The treatment of violent injuries uses NHS resources and money. Whether or not tax-payers' money would be better spent on prevention of violent injuries rather than their treatment under the NHS is a social and political

issue and not a surgical one. Our study provides data to add to the debate. Many surgeons in the UK treat patients with injuries due to violence. Our study shows what the impact of these injuries can be on the resources of an NHS plastic surgery unit.

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