Injury, Int. J. Care Injured 42 (2011) 488–491

Contents lists available at ScienceDirect

Injury

journal homepage: www.elsevier.com/locate/injury

Inner-city gunshot wounds – 10 years on

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ARTICLE INFO

Article history:
Accepted 30 September 2010

Keywords:
Penetrating injury
Gun
Wound
Trauma
Inner-city

ABSTRACT

Introduction: In 1997, *Injury* published one of the first research papers to document the incidence and characteristics of civilian gunshot wounds in a UK urban environment. Since then there has been concern that firearm deaths and injuries have increased despite little published clinical evidence.
Methods: We carried out a retrospective survey ten years on from the initial study. All patients presenting to the Emergency Department (ED) of King's College Hospital with gunshot wounds from 1st January 2003 to 31st December 2004 were identified. Information regarding incidence, patient and injury characteristics and outcome was determined.
Results: 46 patients presented with firearm injuries. 44 were male and the average age was 24 years. The majority were from minority ethnic groups. 38/46 presented out of hours and the police were documented to be involved in 36 cases. All injuries were due to assault by low energy projectiles. Of the 32 patients admitted the mean length of stay was 12.4 days. The majority of injuries were to the musculo-skeletal system. Six patients died from their injuries–5 from head/neck or chest injuries and 1 from intra-abdominal injury.
Discussion: There appears to be little increase in firearm injuries seen over this 10 year period at our hospital and predominately young, black males continue to be the victims. Most present out of hours, potentially placing considerable challenges on junior medical staff. Most wounds were to the musculo-skeletal system perhaps reflecting the desire to maim rather than kill and the absence of high velocity injuries may reflect the UK's stringent gun control legislation. The importance of high quality clinical audit is necessary to effectively plan training, service provision and violence prevention efforts.
Conclusion: Despite public, political and media concerns that deaths and injuries caused by firearms have increased dramatically, this study finds little change in incidence or characteristics of those injured and attending an urban ED over a ten year period.

Introduction

In 1997, *Injury* published one of the very first research articles describing the incidence, injury characteristics and epidemiology of patients injured through gunshot wounds in the United Kingdom.[14] This single-centre study of all such wounds admitted to a major London teaching hospital over a two year period (1993–1995) was undertaken as there was concern at that time that firearm violence in UK urban populations was increasing. In fact, the study showed that the number of patients involved was low, 42 out of 147,012 (0.029%) total Emergency Department (ED) attendances but primarily involved young black males, eight of whom died.

A number of very high profile murders and serious injuries over the past few years may give the impression that injuries and deaths sustained through gunshot wounds have increased dramatically. Home Office statistics demonstrate an increase in crimes recorded by police in England and Wales involving firearms that caused injury (excluding air guns) from 597 in 1992 to 2367 in 2003/2004.[15] Nearly two-thirds of all non-air weapon firearm offences in England and Wales occurred in just three police authorities: Metropolitan (Greater London), Greater Manchester and West Midlands.[15] Table 1 demonstrates a considerable increase in the number of firearm offences and injuries that were reported to the Metropolitan Police over a 20 year period.[12]

Since 1997, there has been little medical research published about UK civilian firearm injuries. Such data is important as the provision of comprehensive and accurate information about injury has been a key element in stimulating injury prevention initiatives and also helps plan service provision and has implications for training emergency and surgical doctors of the future. Other UK studies have shown that the incidence of injuries seems to be increasing, primarily affecting young males from minority ethnic groups disproportionately, who present out of hours (OOH).[13,2]

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doi:10.1016/j.injury.2010.09.041

Table 1
Offences in which firearms were used and were reported to the Metropolitan police (moderate injury was added in 2001).

	1983	1993	2003
Fatal	6	19	32
Serious	32	33	236
Moderate			671
Minor	404	213	1473
Total	442	265	2412

There is strong evidence of a link between firearm-related offending and the trade in illegal drugs, gang culture and areas with higher than average levels of deprivation and unemployment.[8] Low energy transfer wounds from hand-guns and shot-guns (as opposed to rifles) seem to predominate and many can be managed conservatively or on an out-patient basis.[2] However, a large proportion of firearm injuries require a variety of surgical skills that can be a challenge to the most experienced surgeon and represent a considerable financial cost to the NHS.[2]

We carried out a retrospective survey, ten years on from this original study, to examine the incidence, injury characteristics and epidemiology of those who presented to a major London teaching hospital with firearm injuries. This study provides clinical evidence from an under-utilised data set about this mechanism of injury.

Ethical committee approval was not required for this study.

Methods

King's College Hospital is a 950 bed teaching hospital serving an inner city population of 250,000. As well as providing general hospital services for the London boroughs of Lambeth, Southwark and Lewisham it is also a tertiary centre for Neurosurgery, Cardiothoracic and Maxillo-facial surgery. King's is also a receiving hospital for the Helicopter Emergency Medical Service (HEMS).

All patients sustaining gunshot wounds (excluding air-gun injuries) that presented to the Emergency Department (ED) between January 1st 2003 and January 1st 2005 were identified through a retrospective review of the department's trauma database, resuscitation department log-book and the hospital patient database using relevant ICD 10 codes (X72, X73, X93, X95, W32, W34, Y22, Y23 and Y24). The hospital's business intelligence unit was asked to provide total ED attendance figures for 1993/1994 and 2003/2004.

Patients' ED cards and hospital notes were then analysed to verify eligibility and provide the following information:

Patient demographics
Mode and timing of arrival
Injury intent
Police involvement
Anatomical locations of wound/s and treatment
Initial observations (GCS, SBP and RR)
Length of stay (LOS)
ICU admission
Survival to discharge

Each patient's Revised Trauma Score[1] (RTS) (based on first set of assessments in the ED) was calculated using the following formula:

$$RTS = 0.9368\,GCS + 0.7326\,SBP + 0.2908\,RR$$

(GCS = Glasgow Coma Score, SBP = Systolic Blood Pressure, RR = Respiratory Rate)

Results

46 out of 201,680 (0.023%) patient attendances were recorded as being seen at King's College Hospital ED with gunshot wounds. Of these, 44 were male and 2 female with a median age of 24 years (IQR 19–32). One patient was 15 years of age.

Twenty-three patients were documented to be of African-Caribbean origin, four were Black British, three Black 'other', five 'other', four Caucasian, three 'unknown' and one Asian. The police were involved in 36 cases whilst, in the other ten, police involvement was not documented.

The majority of patients (38) presented 'out of hours' (OOH) (outside 08.00–18.00 Monday–Friday), with the highest number seen Thursday–Saturday (27). Each month saw at least 1 gunshot wound with July (7), September (6) and January (6) recording the highest number of visits and November the least (1). Most patients arrived via the London Ambulance Service by land transfer (27), though 5 arrived by the Helicopter Emergency Medical Service (HEMS). Of the others, 6 arrived by private transport, 3 walked in and 2 used by public transport. In 3 cases the mode of arrival was unknown.

All injuries were believed to be due to low energy projectiles. 32 patients were shot once and 12 were hit by multiple bullets (2 cases were not documented). Four patients were shot twice, 4 three times, 1 five times and 1 six times. In 2 cases the number of bullet wounds was documented as 'multiple' but not accurately stated. In some of the cases the bullet passed through more than one anatomical area (Fig. 1).

The mean RTS from data available on 45/46 patients was 6.87 and all injuries were alleged assault. Six patients died. 8 patients were discharged the same day and in 2 cases, disposal was unknown. Of the 32 patients who were admitted, the average LOS was 12.4 days. 6 patients in total received care at some point on the Intensive Care Unit (ICU).

Injuries

Fatalities

Six patients died from their injuries, four of them in the ED, one in theatre and one on the ICU after two days. Of these, two patients suffered single gunshot wounds to the chest, one of which had an emergency thoracotomy at scene by HEMS whilst the other was in asystolic cardiac arrest at scene. A further two patients had wounds to the chest but these were combined with wounds to other areas. One patient was shot six times and involved the chest,

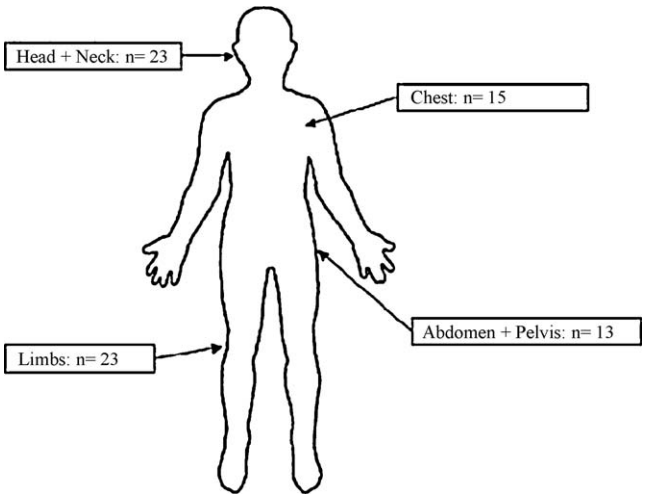

Fig. 1. Anatomic locations of gunshot wounds.