OCCASIONAL PAPER

Management of civilian gunshot wounds in a Nigerian general hospital

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SUMMARY

In a 3-year period (1981–1984), 52 male patients aged 10–60 years were treated for fresh gunshot wounds. The injuries varied from minor soft tissue injuries to major organ and tissue damage, and were all sustained by low-velocity missiles. Six of the patients (11.5%) died of their injuries or complications while 46 (88.46%) survived and were discharged after 1–15 weeks (a mean hospital time of 3 weeks). Some of the patients were treated before referral and for some there was a delay of more than 48 h before definitive specialist treatment. Mortality was related to the severity of wounding and the delay before treatment.

INTRODUCTION

Firearms injuries were rare in pre-1966, peacetime Nigeria. Adeloye (1972) recorded only three cases of missile wounds of the head before the Nigerian civil war. However, in the post-war period (from 1970) there has been an alarming increase in the incidence of civilian gunshot wounds—mostly involving low-velocity missiles.

PATIENTS

More than half of the patients we studied were shot during armed robberies, either on the highway or in their homes. Accidental shooting was quite common and hunting accidents accounted for nearly 50% of such cases. These hunting injuries were inflicted with low-velocity game guns and the victim had usually been mistaken for game. Police, Army and Navy personnel accidentally discharged pistols amongst five of their colleagues. In another incident, the police shot two civilians in cases of mistaken identity.

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Self-inflicted shooting accidents resulted in four injuries and included a 12-year-old boy experimenting with his self-made gun. A 17-year-old boy was shot by his friend while playing on their farm and another 17-year-old boy dropped his gun accidentally causing it to explode. Surprisingly, there were no cases of accidental shooting during village festivals and burial ceremonies when cannons and dane guns are fired as a mark of honour and respect. No case of suicidal shooting was recorded. Attempted assassination of two village leaders was noted in our series and these were related to the hectic political days of 1983.

Twenty patients (38.6%) had been treated in a peripheral hospital before referral. The first hospital either gave first aid treatment or did some exploratory operations. The main reasons for referral were: (1) the presence of inexperienced doctors, (2) mismanagement of the injury, or (3) major complications such as vascular injury, brain injury or fracture. These cases had delays of 1–14 days before specialist treatment. Of the remaining 32 patients who were brought directly to this hospital, treatment was started immediately in 16 but delayed in 16 until blood was available. The routine was to administer a dose of anti-tetanus toxin and prophylactic antibiotics (usually Procain Penicillin and Streptomycin) on admission. In seven cases, primary wound closure was successful in less than half the patients. Other major wounds were explored as soon as cross-matched blood was available. This meant considerable delay at times, as no central blood transfusion unit was available. In some instances, we had to wait for patients' relatives to donate blood. Re-exploration was done in cases that were inadequately treated at the peripheral hospitals. Bullet extraction was undertaken if the pellet lay in the path of exploration, close to a vital organ or was fairly superficial. Of the eight head wounds, two were through and through in the fronto-temporal and fronto-parietal region along the coronary suture, respectively, and both were fatal. The first of these arrived at St Margaret's Hospital 6 h after injury. The second patient died of meningitis having arrived 7 days late. The rest of the head and neck injuries were soft tissue wounds with no complications.

Chest injuries accounted for six cases (11.5%). Three of these were serious with haemothorax, pneumothorax, subcutaneous emphysema and rib fracture. One patient was removed by his parents. The remaining two each had chest drains inserted and one of them subsequently died.

Abdominal and pelvic injuries occurred in four cases (7.6%). Two had intra-abdominal and abdomino-pelvic injuries, respectively, leading to faecal peritonitis. Urgent laparotomies were performed with bowel resections and defunctioning colostomy, but one later died of septicaemia. The other two had simple wounds in the abdominal wall and buttocks. The commonest group were those with limb wounds—33 patients (63.5%). Sixteen (30.8%), of these had associated fractures of long bones. Treatment consisted of wound toilet plus primary or delayed primary closure. Three cases of primary closure became infected while an internally fixed fracture ended disastrously with osteomyelitis. In one young patient, aged 19, the brachial artery was divided with contusion of the median nerve. Exploration was carried out and a 2.5 cm segment of brachial artery resected and an end to end anastomosis performed. Median nerve function returned after 3 months. Unfortunately, two patients from this group died, one having arrived 4 days after the shooting and another from severe haemorrhage and a shattered femur.

Primary wound infection occurred in intraperitoneal gunshot wounds with faecal peritonitis, an open comminuted fracture of the knee, a fractured right humerus, an open comminuted fracture of the tibia and four soft tissue wounds that were sutured primarily.

There were six deaths (11.4%). Four out of the six patients arrived 1–7 days after the shooting. The other two fatal cases reached hospital within 12 h but both had serious injuries: a through and through skull injury and a chest wound with pneumothorax.

DISCUSSION

The damage done by a bullet is dependent on the size, shape, stability, and most importantly the velocity of the missile and the structures with which it comes in contact (Owen-Smith, 1982). Low-velocity missiles have a relatively low kinetic energy available to cause damage. They only damage those tissues which they actually touch. In high-velocity injury, from modern rifle bullets, much more tissue is destroyed. Most authors agree that surgical toilet and delayed primary closure is sufficient for many low-velocity wounds. Several authors (Cranberry, 1973; Ledgerwood, 1977), have stressed that associated fractures and joint injuries should be treated by conventional methods. Open reduction and internal fixation should be avoided because of the risk of osteomyelitis (*vide supra*).

Immediate specialist treatment is advocated for all but the simplest of missile wounds. Delay causes increased morbidity and mortality. Raimond & Samuelson (1970) found increased mortality in patients whose transit time was more than 5½ h, whereas Byrnes *et al.* (1974) recorded only 4% mortality in head missile wounds when patients were brought to hospital within 1–2 h. The overall mortality in these series (11.4%) is similar to others: Azzola *et al.* (1982)—11.4%; Adeloye (1972)—14%. Lack of an efficient blood transfusion service, and unorganized ambulance and police emergency services at peripheral hospitals are thought to be the major contributory factors to mortality in this series.

ACKNOWLEDGEMENTS

I am grateful to Mrs Goldberg, the Librarian at King George Hospital, Ilford, London, England, for making available the reference materials and also to the audio-visual unit of the University of Calabar.

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Received 29 December 1986; accepted 1 February 1987