



RESEARCH ARTICLE

SURVIVORS OF CUT INJURY IN A DEVELOPING COUNTRY

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ABSTRACT

Introduction: Literature search, showed few studies on cut throat injuries from this part of the world though the problem appears not uncommon. This study was undertaken to determine, in those who reached the hospital, the causes, presentation, management and outcome of cut throat injuries in Enugu, southeast Nigeria.

Methods: It was a retrospective study of all the patients with cut throat injuries who presented and were managed at the department of Otorhinolaryngology, Head and Neck Surgery of the Hospital from January 2010 to December 2015.

Results: Fourteen cases were studied, 11 males and 3 females with a ratio of 3.67:1. The ages were 18-69 years with a mean age of 32.50 (SD 13.87) years. Attempted suicide 8(57.1%) was the commonest presentation. The other causes were homicidal injury 4 (28.4%) and 2 (14.3%) cases of accidental injury. Psychiatric illness (35.7%) was the commonest underlying cause of suicidal attempt while motor vehicular crashes (14.3%) was responsible for the 2 accidental injuries. Armed robbery attack, fights during land disputes, domestic violence and sexual assault were the causes of homicidal injury. Most of the injuries 12(85.7%) occurred in Zone 11 area of the neck. Emergency tracheostomy was done in all the patients. This was followed by prompt exploratory surgical intervention with resultant 100% survival.

Conclusion: suicidal attempt was the commonest presentation in patients with cut throat injuries. Early presentation, prompt intervention with adequate treatment produced good outcome.

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INTRODUCTION

Injury to the neck, blunt or penetrating is not uncommon. These injuries can be dangerous and life-threatening because of the vital structures located in the neck. Open injury to the neck whether lacerated or incised inflicted with sharp objects which may be superficial or deep, may be described as "cut-throat" injuries (CTI) (Ladapo, 1979; Ducan, 1975). Death in cut-throat injuries may come from many factors such as profuse haemorrhage from damaged major blood vessels, air embolism or airway obstruction. The aetiology of cut-throat injuries can be broadly divided into suicidal, homicidal or accidental (Onotai and Ibekwe, 2010; Manilal et al., 2011). Injuries to the neck are divided into three anatomical zones. Zone I injury is between the cricoid cartilage and the clavicle, Zone II injury is between the cricoid cartilage and the angle of mandible, and Zone III injury is between the angle of mandible and the base of skull. Our literature search revealed a dearth of information on cut throat injuries from Nigeria, yet we encounter a good number of cases in our practice. This

study was undertaken to determine, in the patients who reached the hospital, the causes, presentation, management and outcome of cut throat injuries in Enugu, southeast Nigeria. Enugu urban city is the capital of Enugu State located in southeast Nigeria with a population of about 722664, and the average annual patient attended to in the Otolaryngology and Emergency Departments stood at 3960 and 6248 respectively. It is the belief of the authors that the lessons and experience from the study will hopefully assist in the management of similar cases in future.

MATERIALS AND METHODS

The study was carried out retrospectively at Otorhinolaryngology, Head & Neck

Surgery Department of University of Nigeria Teaching Hospital from January 2010 to December 2015. The case notes of all the patients irrespective of sex or age with cut throat injuries who presented to the hospital and managed by the Otorhinolaryngology, Head & Neck Surgery Department within the period of study were retrieved. Those excluded were

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minor neck injuries that did not require admission; major trauma to other parts of the body but with minor neck injury; and those brought in dead. The variables studied included patients' age and gender, site of injury in the neck, cause of the cut throat injury, state or condition of patient at presentation, resuscitative measures taken, definitive treatment and complications. The data collected were compiled and analyzed using SPSS 17 software and presented in tabular and descriptive forms.

RESULTS

During the period of study, a total of 17 case notes were identified. Out of these, 3 were excluded from the study because the patients were brought in dead. Thus 14 patients were studied of which 11 (78.6%) were males and 3 females (21.4 %) giving a male to female ratio of 3.67:1. The age ranged from 18 to 69 years with a mean age of 32.50 (SD 13.87) years (95% CI of 24.49 to 40.51) and median age of 29 years. The peak age incidence was in the age group of 21-30 years which accounted for 42.9% of cases. Concerning mode or method of injury, eight (57.1%) patients were due to suicidal attempts, 4(28.45%) victims were due to homicidal injury and 2 (14.3%) cases were due to accidental injury. Psychiatric illness (35.7%) was the most common underlying factor for suicidal attempt whereas motor vehicular crashes (14.3%) was the sole factor for accidental injury. Armed robbery, land dispute, domestic violence and sexual assault shared equally (7.1% each) as the precipitating factor for homicidal injury. The majority of injuries occurred in Zone 11 area of the neck accounting for 85.7% while the rest, 14.3% were in Zone 111. All the patients studied were brought to the hospital and received at the Emergency Room (ER) within 24 hours of the injury. At presentation, majority of the patients (78.6%) presented with open wounds, 64.3% with active bleeding and 21.4% presented with respiratory distress. None of the patients received any medical care prior to presentation to hospital and so were commenced on aggressive resuscitative measures in the ER. They all had emergency tracheostomy to secure the airway and restore normal breathing. All the patients in the study underwent surgical procedures which included: wound debridement, exploration, repair (laryngeal and / or hypopharyngeal as deemed appropriate) and closure. All the suicidal attempts and homicidal injury patients received psychiatric consultations while on admission and were referred to the psychiatric clinic on discharge for further treatment. There was no mortality among the victims studied and complications were very minimal while in the hospital and largely consisted of hoarseness and difficult decanulation, which however, resolved before discharge.

The average hospital stay for the victims was 10-16 days. Late complications among the patients could not be ascertained due to default for follow up and further assessment.

DISCUSSION

Despite the increasing magnitude of various types of trauma all over the world, cut throat injuries are apparently not well represented based on our literature search. However, there are some reports from West Africa highlighting various aspects of the injury. One such report studied the principles of management of such wounds and the attendant complications with emphasis on the forensic implications (Ladapo, 1979). In another article on open neck injuries, surgical airway problems

was the major focus (Eshiet *et al.*, 1997). Amadasun (1999), highlighted problems of decision making in this critical condition of neck trauma. In a study from our centre (Ezeanolue, 2001), the objectives in the management of the airway were outlined. Some other studies (Onotai and Ibekwe, 2010; Adoga *et al.*, 2010) presented the pattern and management of cut throat injuries. Most of the patients in our study were in the third decade of life and affected more males than females, a finding which agrees with several other reports (Onotai and Ibekwe, 2010; Manilal *et al.*, 2011; Bhattacharjee *et al.*, 1997; Gilyoma *et al.*, 2014; Beigh and Ahmad 2014). Male preponderance is attributable to their adventurous nature, risk taking ventures and violence prone activities. Considering the causes of cut throat injuries, the majority of patients in this study were due to suicidal attempt (57.1%), followed by homicidal injury (28.4%) and accidental injury (14.3%). In Adoga *et al.*'s, (2010) case series, all the patients had attempted suicide. In the study by Beigh and Ahmad, (2014) attempted suicide was the cause in 58%, homicide in 38% and accidental in 3% of patients. Similarly CTIs were reported to be caused by suicide attempts in the majority of cases in western studies (Gordon *et al.*, 1988; Simpsons, 1991). In contrast, Modi and Pandy, (1977) observed that in India, suicidal wounds of the throat were rare. Similarly, Gilyoma *et al.*, (2014) reported that the causes of majority of cut throat injuries in their study were due to homicidal injury and the remaining patients were due to suicidal attempt and accidental injury. The study further observed that interpersonal conflict was the most common underlying factor for homicidal injury whereas psychiatric illness and motor vehicular crashes were responsible for most of suicidal attempts and accidental injuries respectively. Similar finding was also reported in Bangladesh by Manilal *et al.*, (2011). Suicidal attempts ranked highest as the cause of cut throat injuries in this study with psychiatric illness as the leading underlying factor. In consonance with the findings in this study, psychiatric illness has been reported to be associated with suicidal attempt (Mohanty *et al.*, 2007; Terra 2008). It has been stated that psychiatric illnesses are the strongest predictors of suicide (Terra, 2008). It has also been observed that suicide occurs about twenty times more frequently in individuals with psychiatric illness than the general population (Adoga *et al.*, 2010; Mohanty *et al.*, 2007; Terra, 2008).

Other cases of CTIs were reported for their rarity and very unusual circumstances (Jain *et al.*, 2014; Solrino *et al.*, 2011; Marak *et al.*, 2005]. In this study only 3 females (21.4%) were involved in the CTIs. Two were victims of homicidal injuries and one was suicidal attempt. One was motivated by land dispute while the other two cases were motivated by sexual violence in one and the other by sexual abuse. In Manilal *et al.*'s (2011), female victims of suicidal cut throat injuries outnumbered males. This is unusual as most other studies (Fukube *et al.*, 2008; Sharma *et al.*, 2013) showed suicidal injuries as commoner in males than females. The majority of the injuries in our study were in Zone 11 area of the neck and most of them had associated laryngeal injury which is in keeping with other studies (Manilal *et al.*, 2011; Bhattacharjee *et al.*, 1997; Gilyoma *et al.*, 2014; Okoye and Oteri, 2001). The predominance of zone 11 injuries in this study may be attributable to the fact that unlike zones 1 and 111, zone 11 is not protected by bony structures making it more vulnerable to injuries. The risk of injury is different in the three zones (Ducan, 1975). Injuries in zone 11 are the easiest to expose, and evaluate (Ladapo, 1979; Ducan, 1975, Manilal *et al.*, 2011,

Bhattacharjee *et al.*, 1997, Okoye and Oteri, 2001]) and would give a better outcome. Similar to reports by other authors (Onotai and Ibekwe, 2010; Manilal *et al.*, 2011; Gilyoma *et al.*, 2014; Beigh and Ahmad, 2014) majority of patients in this study presented with open neck wounds and active bleeding. Respiratory distress was reported in 3(21.4%) of cases. "Exposed hypopharynx and/or larynx following cut throat, haemorrhage, shock and asphyxia from aspirated blood are the commonest cause of death following cut throat injury" (Ducan, 1975). It was observed that appropriate measures could save lives in vast majority (Ducan, 1975). Other problems of CTIs when not immediately fatal include sepsis, hypertrophic scars, swallowing difficulties and phonatory incapacity (Ladapo, 1979). All the patients in this study were received in the hospital within 24 hours of injury. None of our patients had pre-hospital care and as such were brought in by their relatives. This situation applies to many other developing countries (Norberg, 2000; Chalya *et al.*, 2010). The lack of adequate pre-hospital care for these patients and ineffective ambulance system for transportation of patients to hospitals are major challenges in providing care for trauma patients in our environment and have contributed significantly to poor outcome of these patients. The pre-hospital care of trauma patients has been reported to be the most important factor in determining the ultimate outcome after the injury (Norberg, 2000)

According to Onotai and Ibekwe (2010), CTIs require a multidisciplinary approach and can be managed with a better prognosis if patients present early to the hospital and receive prompt attention. Cut throat injuries require a multidisciplinary approach involving the anaesthetist and psychiatrist working in conjunction with otolaryngologist and could be managed with better prognosis if the patients present early to the hospital and are given prompt attention (Bhattacharjee *et al.*, 1997; Herzog *et al.*, 2005; Bailey, 1997). The anaesthesiologist secures an uncompromised airway and makes sure the patient is breathing. The otolaryngologist assesses the injury and surgically repairs the severed tissues with the aim of restoration of breathing, swallowing and phonation. For attempted suicide cases, the psychiatrist provides adequate care and supervision during and after surgical treatment. Tracheostomy was done on all the patients in this study as part of the immediate treatment for reasons given earlier and through it anaesthetic gases for general anaesthesia were administered to effect proper surgical repair of the severed anterior neck structures. The importance of tracheostomy in the management of cut throat injuries has been emphasised by other workers (Ladapo, 1979; Ducan, 1975; Manilal *et al.*, 2011; Ezeanolue, 2001; Danic *et al.*, 1996). Endotracheal intubation via the oral or nasal route is an alternative method of securing a patent airway. The predicament is that upper airway anatomy could be distorted making intubation difficult and there is the additional hazard of inhaling vomitus, blood or secretions (Ducan, 1975; Bailey, 1997). The securing of a patent airway by intubating the trachea with an anaesthetic endotracheal tube through the neck wound as emergency treatment in a desperate situation with inadequate facilities have been reported (Ezeanolue, 2001; Bailey 1997). In severe airway compromise reports have been made of airway maintenance with endotracheal intubation alone and there have been reports of the effective use of a fiberoptic laryngoscope to intubate the trachea following a cut throat injury (Venkatachalam *et al.*, 2007). Apart from tracheostomy, the operative procedure in our patients consisted of exploration of

the wound, ligation of damaged vessels and repair of other damaged structures. Adequate wound toileting and proper repair of wound in early admission allowed better wound healing. All our patients had injuries exposing their hypopharynx and larynx. Apposition was achieved in all of them with complete restoration of swallowing, phonation and breathing. This outcome was due to repair of the injuries in anatomical layers, preserving fragments of cartilages and grafting them in their rightful positions. In this study, surgical debridement, laryngeal/hypopharynx repair and tracheostomy were the most common surgical procedures performed as were reported by other authors (Onotai and Ibekwe, 2010; Manilal *et al.*, 2011; Bhattacharjee *et al.*, 1997; Gilyoma *et al.*, 2014; Okoye and Oteri, 2001) Intra and post operative antibiotics were given to prevent wound infection and the development of perichondritis and lung infection. Fluid resuscitation was given to obviate dehydration that can arise from excessive loss of saliva and the inability to swallow normally. The inspired air was humidified and regular suctioning was done to take care of the lungs and tracheo-bronchial tree.

In all our patients who had attempted suicide and homicidal injury, psychiatric evaluation was sought. This was to guide against a possible second attempt and provide further psychological care (Ducan, 1975; Amadasun, 1999). Victims of homicidal cut-throat need psychological support to overcome the trauma to their psyche, which may linger after the neck injuries have healed (Amadasun, 1999). The patients in this series had full recovery on discharge. This is attributable to early presentation, brisk response and careful handling by the clinical personnel that managed the patients. Default in follow up hampered long term assessment as the case notes indicated that the patients hardly turned up for follow up.

Conclusion

Suicidal attempt was the leading cause of cut throat injuries in this study. Therefore, the relevant agents and authorities would help in reducing the prevalence of CTI if measures are put in place to productively engage the vulnerable segments of the society. Provision of social security could as well play a useful role as a short term measure.

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