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Cut throat injuries at a tertiary referral hospital in guwahati: a review of 165 cases

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Abstract
Aim: *This study was conducted in our hospital to describe the etiology, patterns and treatment outcome of these injuries.Methodology:A combined retrospective and prospective study of 165 cases of cut throat injury patients managed at a tertiary hospital in Guwahati between august 2013 to august 2015.*
Results:*Age varied from 6 years to 80 years. Male tofemale ratio was 6.17:1. Amongst them 80 cases (48.48%)were homicidal ; 66 cases (40%) were suicidal; 19 cases (11.51%) were accidental of which 12 cases were due to road traffic accident and 7 were due to fall. The majority of injuries were in Zone II accounting for 89.09% of casesout of which 43 cases (26.06%) had laryngeal injury. Emergency tracheostomy was done in 46 cases (27.87%). An average hospital stay for most of the patients was less than 3 weeks.3 victims (1.81%) died due to haemorrhage and septicaemia.*
Conclusion: *Cut throat injuries are a major cause of morbidity and mortality among young adult males in our setting. Social commitment political motivation, decreasein the poverty, individual awareness, increase in economic growth, and literacy rate will prevent cut throat injuries. Early and improved management will reduce the mortality and morbidity.*
Keywords*: Cut throat injuries,Etiology, Patterns, Treatment outcome, Gauhati*

I. Introduction

Cut throat injuries are a unique form of trauma that is potentially devastating and associated with substantial emotional, physical and financial burden on community and hospital resources,[1]. Cut throat injuries causes profound morbidity due to prolonged hospitalization, high cost of health care, loss of productivity and reduced quality of life and above all death,[1, 2].Globally cut throat injuries account for approximately 5% to 10% of all traumatic injuries with multiple structures being injured in 30% of patients,[3-7].Cut throat injuries pose a great challenge because multiple vital organs for phonation, deglutition, vascular and neurological structures vulnerable to injuries are present in the small, confined unprotected area. A sudden increase in the number of admissions of patients with cut throat injuries in our setting prompted the authors to analyse this problem.

II. Materials andmethods

This was a combined retrospective and prospective study of cut throat injury patients who presented to the Emergency departmentof our hospitalbetween August 2013 andAugust2015. A total of 165 cases of cut throat injury were included in the study irrespectiveof their age and sex.

The details of patients who presented from August 2013 to August 2014 were retrieved retrospectively from patient registers kept in the Medical record departments, the otorhinolaryngology wards, and operating theatre. And a prospective observational study was done on the patients who presented to the Emergency department between September 2014 and August2015.

All thepatients wereresuscitated in the Emergency department according to Advanced Trauma Life Support (ATLS) which begins with a primary survey giving importance toairway, breathing, and circulation (ABC). After patient's vitals are stabilised, they undergo a secondary survey which includes a complete history and a thorough physical examination. These steps help to identify the likely injury complex and to direct further treatment or diagnostic testing.

The patients with superficial cut injuries, their wound was closed in layers under aseptic precautions. For those patients who had their larynx or trachea or pharynx severed were taken to the operation theatre for repair andreconstruction under tetanus toxoid and broad spectrum antibiotic coverage. In such cases emergency tracheostomywas done. Defect in the laryngeal cartilage was reconstructed by 3-0ethilon. Themucous membrane, muscles, thyroid gland and soft tissues were approximated by 3-0 vicryl. Skin wasclosed with 3-0 ethilon.

All the data regarding study population were collected and compiled in a structured questionnaire. All the data pertinent to the patient kept confidential.

Data were categorized according to the demographic pattern of the patient, cause, site of the neck injury (according to the defined zone of the neck), type and extend of the tissue damage or involved,presentation

during admissiontimetaken or delay from the incidence to the hospital attendance (injury-arrival interval) and duration of the hospital stay, records of mortality, noticeable morbidity and outcome. Patients who were prospectively enrolled in the study were followed up till discharge or death.

III. Results

A total 165 cases of cut throat injury were included in the study, in that males were 142(86.06%) and females were 23 (13.9%) [Table 1]. Male tofemale ratio was 6.17:1.

Age rangedfrom 6 years to 80 years (mean 25.2). The peak age incidence was in the age group of 21-30 years and accounted for 43.03% of cases [Table 2]. 120 (72.73%) cases werefrom rural community and the rest 45 (27.27%) were from urban community [Table 3]. The most common cause of cut throat in our study was homicide80 cases (48.48%), followed bysuicidal 66 cases(40%), road traffic accident12 cases(7.27%) andaccidental fall7cases (4.24%)[Table 4].The vast majority of patients, 108cases (65.45%) reported to the hospital within 6 hours after injury [Table 9].According to the anatomical site, 147(89.09%)cases had injury in Zone II, 11 (6.67%) cases in Zone III and7 (4.24%) cases in Zone I [Table 5].Majority of the patients were referred to our hospital after primary resuscitation at other hospitals. Duringpresentation, the majority of victims presented with open wounds and active bleeding55 cases(33.33%).Referred patients with inadequatewound managementat primarycentrewere 32 cases (19.39%)and 28cases(16.96%) were referred to our hospital with proper wound management.46 cases (27.87%) presented with respiratory distress and 4 cases (2.4%) were in haemorrhagic shock [Table 6].Skin, soft tissue and small vessels were severed in all the cases (100%). 43 cases(26.06%) had laryngeal injury.Pharynx was injured in 18cases (10.09%). Trachea was cut in7cases (4.24%). Major vessel injury (internal jugular vein and carotid artery) observed in 4 cases (2.42%)[Table 7].All patients in this study underwent surgical procedures. Simple wound closure was done in70 (42.42%) cases. Laryngealrepair was done in 25 (15.15%) cases. Laryngeal and hypo pharyngeal repair done in18 (10.9%) cases. Ligation of major veins were done in 2 cases (1.21%) and major arteries were ligated in 2 cases (1.21%). Tracheostomy was done in 46 (27.87%) cases. Blood transfusion given for4 (2.42%) cases. Psychiatric consultation obtained for 66(40%) cases [Table 8]. Majority of the patients improved and were discharged within 2 weeks [Table 10]. 3 cases (1.81%) died due to haemorrhage, septicaemia. Most common causes of morbidity were wound infection, neurologicaldeficit, laryngeal stenosis and permanent tracheostomy [Table 11].

Table 1: Sex distribution of the patients

Sex	Number	%
Male	142	86.06%
Female	23	13.9%
Total	165	100%

Table 2: Age Distribution of the patients

Age	Male	Female	Total	%
<20 years	10	4	14	8.48%
21-30 years	65	6	71	43.03%
31-40 years	34	5	39	23.63%
41-50 years	17	3	20	12.12%
51-60 years	6	1	7	4.24%
>60 years	10	4	14	8.48%
Total	142	23	165	

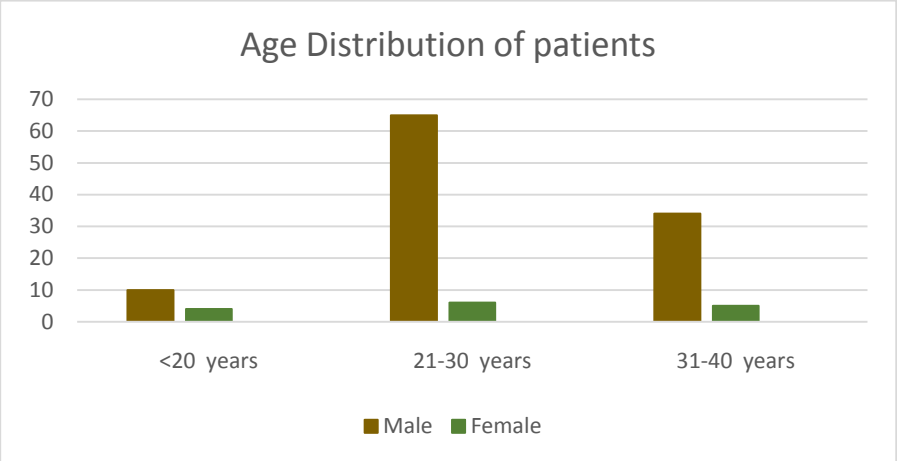

Table 3: Habitat of the patients

Habitat	Number	%
Rural	120	72.73%
Urban	45	27.27%
Total	165	100%

Table 4: Cause of cut throat injury

Cause	Number	%
Homicide	80	48.48%
Suicide	66	40%
Road Traffic accident	12	7.27%
Fall from height	7	4.24%
Total	165	100%

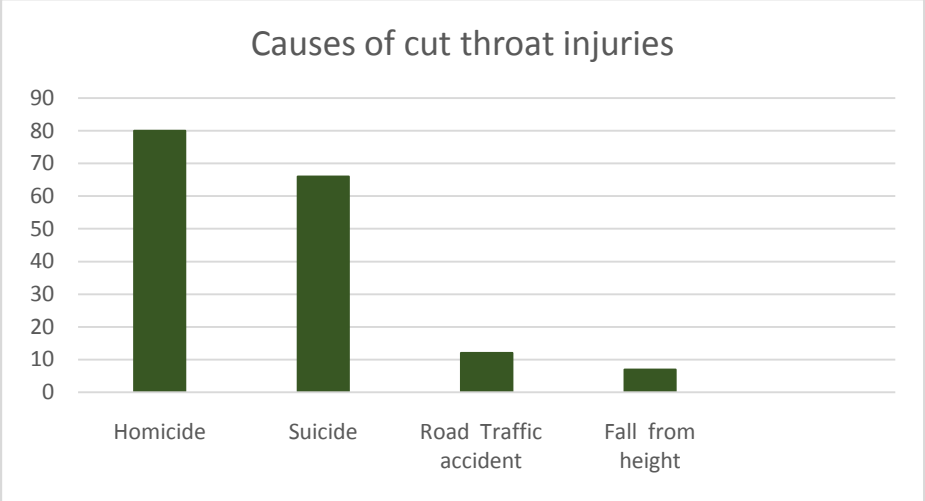

Table 5: Anatomical Sites (Zones) of injury

Zone	Number	%
Zone 1	7	4.24%
Zone 2	147	89.09%
Zone 3	11	6.67%
Total	165	100%

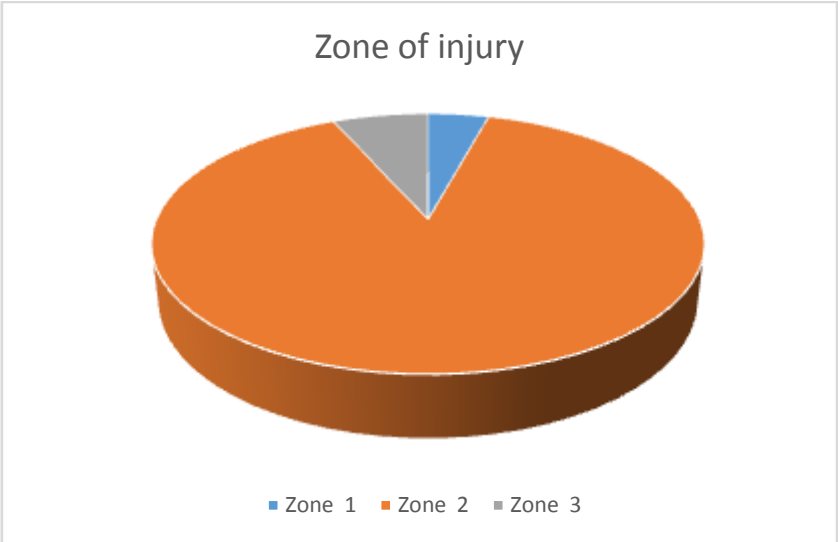

Table 6: Presentation of cut throat patients

Presentation	Number	%
Open wounds with bleeding	55	33.33%
Respiratory Distress	46	27.87%
Inadequate Wound Management	32	19.39%
Proper wound Management	28	16.96%
Haemorrhagic Shock	4	2.42%
Total	165	100%

Table 7: Structures injured in the neck

Structures	Number	%
Skin, platysma, soft tissue, fascia(superficial & deep), small vessels	165	100
Larynx	43	26.06%
Pharynx	18	10.9%
Trachea	7	4.24%
Internal jugular vein	2	1.21%
Carotid artery	2	1.21%

Table 8: Treatment provided for cut throat patients

Treatment provided	Number	%
Simple repair and closure	70	42.42%
Laryngeal repair	25	15.15%
Laryngeal and Hypopharyngeal repair	18	10.9%
Tracheostomy	46	27.87%
Ligation of major veins	2	1.21%
Ligation of major arteries	2	1.21%
Blood transfusion	50	30.3%
Psychiatric consultation	66	40%

Table 9: Time of delay in hospital arrival of the patients

Time of delay in hospital arrival	Number	%
<6 hours	108	65.45%
6-12 hours	42	25.45%
13-24 hours	7	4.24%
>24 hours	8	4.84%
Total	165	100%

Table 10: Average duration of hospital stay

Duration	Number	%
<3 days	9	5.45%
3-7 days	65	39.39%
8-14 days	59	35.75%
15-21 days	17	10.3%
>21 days	12	7.27%
Total	162	98.18%

Mortality- 3(1.81%)

Table 11: Post repair morbidity

Morbidity	Number	%
Satisfactory wound	108	65.45%
Secondary infection and scar	40	24.24%
Decannulation problem	15	9.09%
Post op laryngeal stenosis	2	1.21%
Permanent tracheostomy	2	1.21%
Neurological deficit	3	1.81%
Repeated attempt	5	3.03%

IV. Discussion

Penetrating neck injury constitutes 5% to 10% of all the trauma cases. Amongst these, 30% patients have multiple injuries in other parts of the body. According to the world Health Organization (WHO), every year over 5millionpeople around the world die as a result of injury. As per WHO, it is estimated that for every death 10-20 gets hospitalized and 50 - 100 receives emergency care, indicating the burden on the resources of the country. Management of cut throat injury is a challenging task as the most important organs like larynx,

trachea, pharynx, carotids and nerves are present in a small confined area. Cut throat injuries are less commonly reported in the literature.

In this review of 165 cases, most of the cut throat injury patients were youngmales in their third decade of life belonging mainly to rural areas, a finding which agrees with findings reported elsewhere,[3,10,11,14,15].Most of these males had low education level andwere unemployed. Male preponderance in this age group is attributable to their active participation in risk taking behaviours and their frequent involvement in interpersonal violence. This has great economic impact since these are people in their most productive years and the injuries impose a considerable burden on their families and the society as a whole. Unemployment can act as a stressful life event leading to suicide with studies suggesting an increase in the suicide rates among unemployed individuals than in the general population, [15]. Socioeconomic improvement of otherwise normal individuals by provision of jobs for example and family planning education can eliminate the triggering factor of unemployment.

The most common cause was found to be homicide followed by suicidal attempt, road traffic accidents and accidental fall in our study. Males dominated both in homicidal and suicidal cut throat injury. Study conducted in the western population shows suicidal cut throat to be the most common cause, in contrast to our study. But in developing countries homicide is the most common cause for cut throat, [14, 15].Psychiatric illnesses are the strongest predictors of suicide. Suicide occurs 20.4 times more frequently in individuals with psychiatric illness than the general population, [15].

According toRoon and Christensen's classification, neck injuries are divided into three anatomical zones.

Zone I is defined as the area from the clavicles to the inferior margin of cricoid cartilage. Structures within this zone include the vertebral and proximal carotid arteries, major thoracic vessels, superior mediastinum, lungs,oesophagus, trachea, thoracic duct and spinal cord.

Zone II extends from the inferior margin of the cricoid cartilage to the angle of the mandible. The carotid and vertebral arteries, jugular veins,oesophagus, trachea, larynx and spinal cord are found in this zone.

Zone III is located between the angle of the mandible and the base of the skull. It includes the carotid and vertebral arteries, pharynx and spinal cord, [8].

The majority of injuries in our study were in Zone II and most of them had laryngeal injury which is in keeping with other studies, [11]. The predominance of Zone II injuries in our study is attributable to the fact that unlike Zones I and III, Zone II is not protected by bony structures making it more vulnerable to injuries. Injuries in this zone are the easiest to expose in cut throat injury.

As reported by others, [3, 10] majority of patients in this study presented with open wounds and active bleeding. Haemorrhagic shock and respiratory distress were reported in only 2.42% and27.87% of cases respectively. Exposedhypopharynxand or larynx following cut throat, haemorrhage, shock and asphyxia from aspirated blood are commonest cause of death following cut throat injury. A good knowledge of the nature and type of cut throat wounds allows the clinicians to understand the type of weapon used and this is of great importance for medico-legal purposes and surgical treatment.

In this study, simple repair, laryngeal/hypopharynx repair and tracheostomy were the most common surgical procedures performed. Similartreatmentpatternswere reportedby other authors,[3,10,11]. Cut throat injuries require a multidisciplinary approach involving theanaesthetist and psychiatrists working in conjunction with the Otolaryngologist and could be managed with better prognosis if the patients present early to the hospital and are given prompt attention, [11, 12, 13].

IsehK.R. *et al*. suggested that pharyngeal, hypopharyngealand laryngeal mucosal lacerations should ideally be repaired early (within 24 hours),[3-5].

Most of the patient reached the hospital within 6hrs following injury. Outcome was better for the patientswho received timely primary care and who managed to reach the hospital at the earliest. Patients who had laryngeal and pharyngeal injury had tracheostomy done for airway management. For most of them tracheostomy tube removal was done by 10 to 12 days. In our study,psychiatricconsultation was obtained in allpatients who attempted suicide as suicide isa sign of underlying mental illness and there is a possibility of a second attempt, [10, 15].

The length of hospital stay has been reported to be an important measure of morbidity among trauma patients. Prolonged hospitalization is associated with an unacceptable burden on resources for health and undermines the productive capacity of the population through time lost during hospitalization and disability,[1,2,10].

V. Conclusion

Incidence of cut throat injuries and associated morbidities& mortalities are not uncommon in present daylife.The aim and objective of our study is to analyse the socio demographic pattern, causes or motives of the cut throat and its outcomes.The socio demographic data, motives of trauma, structures injured, and treatment given at our hospital, complications and mortalities wereanalysed. In conclusion according to our study

homicide is the commonest cause of cut throat injury, in this part of India. Unemployed young adults of low socioeconomic class are mostly affected.

According to the results of our study it is supposed that the early appropriate measures could save lives in vast majority. Addressing the root causes of violence such as poverty, illiteracy, unemployment and substance abuse will reduce the incidence of cut throat injuries in our society. Providing the efficient emergency health care services for primary care and effective ambulance system for immediate transport of cut throat victims to hospital will decrease time delay in reaching the hospital. Stringent and appropriate measures by the government agencies for enforcement of law and order will reduce the burden of homicidal cut throat in near future. [14].

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