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RESEARCH ARTICLE

A Study on Surgical Exploration Of Penetrating Neck Trauma Cases

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Abstract

Penetrating neck trauma is increasingly becoming a common occurrence in the urban scenario. Such cases are frequently presenting in tertiary care hospitals. They may be accidental in nature or may be the result of an attempted homicide or suicide. Our study done in a tertiary care hospital attempts to assess the importance and efficacy of immediate surgical exploration of such injuries. A total of 34 cases presenting over a period of two years were included in the study. They were subjected to immediate surgical exploration and repair. No preoperative radiological investigations were done due to urgency of the presentation. The patients were followed up for a minimum period of three months. At the end of the study period the nature of outcome of this form of management and occurrence of any complications were noted. Our study concluded that immediate surgical exploration and repair of penetrating injuries is an appropriate approach and has minimal long term complications.

INTRODUCTION

Neck is an important anatomical entity which acts as a conduit for important systems such as air passages, gastrointestinal system as well as vascular and neurological systems. Any injury in this region carries the possibility of affecting many systems at a time and there is a high risk of mortality if not managed properly.

Considering the rising incidence of violence in the society, both intentional and accidental, the incidence of penetrating neck injuries is also increasing. Such injuries comprise about 10% of the injuries. Most of the studies on such type of injuries were done during the Second World War which typically presents a different scenario which is very much different from the contemporary urban scenario.

Management of penetrating neck injuries requires on part of the surgeon the presence of mind to take in the situation and quickly examine the patient, thoroughness of the subject to identify the structures injured and plan their management and physical agility to quickly shift the patient to the operating room, personally if needed.

Cases and methods

This is a prospective analytical study with active intervention done on 34 patients brought to the emergency department of a tertiary care hospital with injuries to the neck. The study plan was approved by the institutional ethical committee. The duration of the study was two years. Inclusion criteria include cases with injuries which breached the skin. Initial management consisted of first stabilizing the patient haemodynamically and securing the airway if necessary. The patient was then subjected to a thorough examination of his/her injuries to ascertain the mode of violence and the cause of sustenance of his/her injury. The injuries were classified according to their presence in to three zones of the neck as a given by Roon and Christenson. The neck is divided into the following

three Zones; zone 1 extends from suprasternal notch to cricoid cartilage; zone 2 extends from cricoid cartilage to angle of mandible; and zone 3 includes the skull base. A brief history was taken from both the patient, if possible and his attendants independently to ascertain the facts. Initial investigation was limited hematological tests and screening for HIV and HBsAg antigens. The patient was immediately taken to the operation theatre for wound repair. In case of major vessel injury help of the CT surgeon was also taken. Patient with breach of airway underwent a compulsory tracheostomy. After discharge all patients were followed up for a period of minimum three months to look for any complication arising due to the injury or the surgery.

Results

On analysis of gender wise distribution of cases an overwhelming majority of the patients were male. They constitute 94% of the cases. This may be because of the lifestyle and gregarious nature of the male sex. This is in agreement with the study done by Ozdemir et al[5] which also has reported a male predominance. Though violence against females is rising in the society they still constitute a minority in such type of cases.

Age wise distribution revealed maximum number of cases were in the age group of 21 – 30 years i-e 14 cases (41% of the patients). This was followed by 11 cases (32% of the patients) in the age group of 31-40 years. These age groups are the most productive and their disability has a deleterious effect on both the patient's family and the society. The next most common age group was the 41-50 years with 4 cases (11.7% of the patients). Patients in 51-60 years age group included 2 cases (5.8% of the total cases).[Fig:-1]

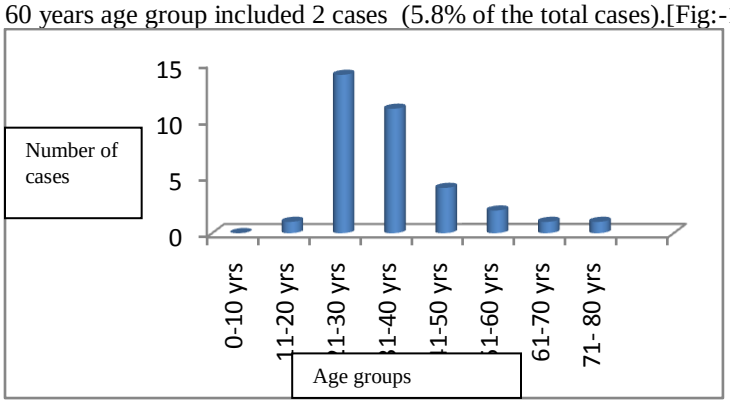

Fig:-1. Age wise distribution of cases

Classification of cases on the basis of sustaining the injury demonstrated that 38.2% of the cases were the result of a homicidal attempt. The percentage of cases that suffered an accidental injury were 35.2%. The percentage of cases with injuries due to a suicidal attempt were 26.4%.This shows that there is very minimal variation among the three groups with no single cause being predominant. [Fig:-2]. B.Vishwanatha et al[6] in their study stated predominance of homicidal cases over suicidal and accidental cases. Our study showed no single cause as predominant. However a larger sample size may be required to establish this aspect.

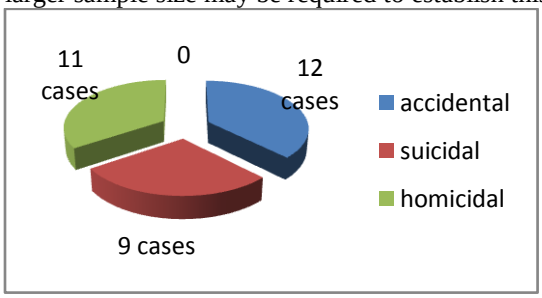

Fig :-2. Distribution of cases based on nature of injury

On classifying the cases based on location of injuries according to zones of the neck displays that a majority of the cases (approximately 91.1%) were located in Zone 2. This might be because of large surface area and prominent contour of this zone. Percentage of cases in Zone 1 were 8.8%. There were no cases with injuries to Zone 1. This might be because of the relative inaccessible location of zone 1.[Table]. A similar classification was followed by Bumpous J.M. et al[8] and their study also concluded the predominance of injuries in zone 2 and due to similar reasons as observed in our study.

Zone of the neck	Number of cases
Zone 1	3
Zone 2	31
Zone 3	0

Table:- Zonal distribution of cases

Analysis of presenting complaints shows external bleeding as the most common complaint, followed by aphonia or hoarseness of voice (9 cases). The complaints in decreasing order of incidence include loss of consciousness, neurological deficits due to brachial plexus and recurrent laryngeal nerve injury and subcutaneous emphysema

The most common structures observed to be damaged were skin, platysma and strap muscles. 38.7% of the cases had injuries to the airway also. 11.7% of cases had major vessel injury. Other structures damaged were Recurrent laryngeal nerve, brachial plexus and glandular elements.

Tracheostomy was done in 13 of the cases. This is in contradiction to the study by Kaya K.H. et al[(2)] who advocated an emergency tracheostomy in all cases. In our study we performed a tracheostomy only in cases with airway damage.

On analyzing the complications and long term sequelae it was found that death occurred in 3 cases. Two cases had haematoma formation. Two cases had neurological deficits due to Brachial plexus and Recurrent laryngeal nerve injury. There was a case of infection at the site of injury.

Conclusion

Studies on management of penetrating neck trauma are generally limited by a small sample size. This study however brings forth many important and relevant in managing penetrating neck trauma as listed below:-

1) Most of the cases are in males of the age group of 20-40 years
2) Reasons for the injury can vary with no single cause being predominant in any age groups
3) Most common site of injury was zone 2 of the neck as this is the largest in surface area and also the most exposed.
4) Presenting complaints were very much varied. Apart from external bleeding they depend on the structure most commonly damaged. Of all the structures the airway was the most commonly damaged as it is most prominent.
5) No specialized investigations were needed and immediate surgical exploration was found to be very effective in management.

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