EM Farrar ¹, A Prasai ¹, TJ Stansfield ²

1. ENT Department, Leeds Teaching Hospitals NHS Trust, UK
2. Leeds Vascular Institute, Leeds Teaching Hospitals NHS Trust, UK

Penetrating Neck Injury: current management in a UK Major Trauma Centre

Introduction

Penetrating Neck Injury (PNI) is an uncommon presentation in the UK. Since the inception of the UK Major Trauma Centre network in 2012, patients suffering major trauma are predominantly managed in one of 22 Major Trauma Centres (MTC).^{1,2} However, there is no national guideline or standard of care for management of PNIs, and cases are managed by a variety of surgical specialties, depending on presentation, pattern of co-existing injuries, and organisation of services within an individual MTC.

Aims

To retrospectively analyse a UK Major Trauma Centre experience of PNI presentation, management and prognosis.

Methods

Patients presenting to a UK MTC with PNI between April 2013 and Dec 2017 were identified through a TARN³ database interrogation. Electronic patient records were then reviewed, and demographics, Injury/operative profile, length of stay, and mortality were recorded.

Results

25 patients with PNI were identified, age range 20-73 years, mean 43 years. Mechanisms of injury were: 1 gun shot wound, 1 dog bite, and 23 stabbings (of which 8 were deliberate self-harm). The median Injury Severity Score (ISS) was 15. 21 patients survived. 3 patients were moribund on arrival and did not survive emergency department resuscitation (1 gun shot wound, 2 stabbings).

Vascular Interventions		Aerodigestive Interventions	
Venous ligation	4	Laryngeal/tracheal repair	3
Venous repair	1	Tracheostomy	3
Arterial ligation	2	Pharyngeal/oesophageal repair	5
Arterial repair	1	Submandibular gland repair	2
Arterial embolisation	1		

Table 1. Interventions (22 interventions across 15 patients)

The remaining 22 patients all had a minimum of wound debridement and closure. 15 patients had structural neck injuries requiring more complex intervention (detailed in table 1). 11 were investigated with a pre-operative CT angiogram. 1 patient with deliberate self-harm died post-operatively from gastrointestinal necrosis resulting from a concurrent ingestion injury.

Surgical interventions were most commonly performed by Vascular, ENT, or Maxillofacial surgeons, sometimes working in combination. Cardiothoracic surgeons performed a sternotomy for proximal control of a subclavian artery injury. Plastic surgeons explored and closed uncomplicated PNIs occurring in polytrauma patients who were going to theatre for management of limb wounds. Interventional radiology performed the one arterial embolisation. One patient who sustained blunt head trauma in addition to a stabbing required neurosurgical intervention. Multiple specialties were involved in several cases.

Aerodigestive tract injuries and ISS>15 were independently significant predictors for hospital length of stay > two weeks (p<0.01, Chi Squared Test).

Discussion

The TARN database provides a replicable method for identifying the most severely injured patients. However, minor injuries are not captured (e.g. isolated neck injuries with a hospital stay of less than 3 days), and conclusions about overall case numbers cannot be drawn.

Traditional protocols of management of neck trauma according to zone of penetration have largely been superseded by the targeted use of CT angiography, which along with clinical assessment, can guide perioperative planning.⁴

Conclusion

PNIs are diverse in nature, severity, and associated polytrauma. Management in this context involves injury prioritisation and a complex specialty care interface. ENT surgeons have an important role in management of aerodigestive tract injuries in particular.

This is the first study to demonstrate the extent of multidisciplinary involvement in PNI management in a UK MTC. We suggest that any national guidelines will need to engage ENT, maxillofacial, vascular, and plastic surgeons at a minimum, if they are to successfully encompass the breadth of UK expertise in PNI management.

References

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