



Role of Physical Examination in Decision Making for Selective Exploration in Patients with Penetrating Zone II Neck Injury

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ABSTRACT

Objective: To evaluate the role of physical examination in decision making for exploring patients with penetrating zone II neck injury.

Methods: This was a cross-sectional study being performed in a level I trauma center between 2006 and 2010. The present study reviewed the records of 150 patients with penetrating neck injuries. Of 46 cases with zone II deep platysma neck injuries, 3 patients died before taking any significant medical measure.

Results: Thirty of 43 patients (70%) presented with hard sings while 13 (30%) did not show these sings. All patients underwent neck exploration. Two patients (4.6%) without hard sings exhibited positive findings, whereas 29 cases (67%) with hard sings reported positive on exploration.

Conclusion: Briefly, we hold the view that it seems reasonable to follow an algorithmic approach by using physical examination of the patients with zone II penetrating neck injuries. This prevents unnecessary exploration for management of such patients.

Keywords: Penetrating neck injury; Platysma, Physical examination; Exploration.

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Introduction

Since a number of vital structures are located in the neck, this region is highly vulnerable to the risk of injuries [1]. Thus, a proper approach to traumatic neck injuries has been a great challenge for physicians [1,2]. By the end of the Second World War, most trauma centers adopted the policy of mandatory exploration which led to a significant reduction in morbidity and mortality of patients with neck injuries [1,3]. Accordingly, in our country surgeons

have already followed the same strategy, especially during Iran-Iraq war between 1979 and 1987.

Since the rate of negative results following mandatory exploration was significant many centers were encouraged to carry out an alternative program based on evaluating patients' status [1,3,4]. Hence, studies were conducted to challenge the obligatory exploration policy [5]. Although the results of many studies support the selective exploration program based on symptoms and physical findings, the strategy of obligatory exploration is still recommended

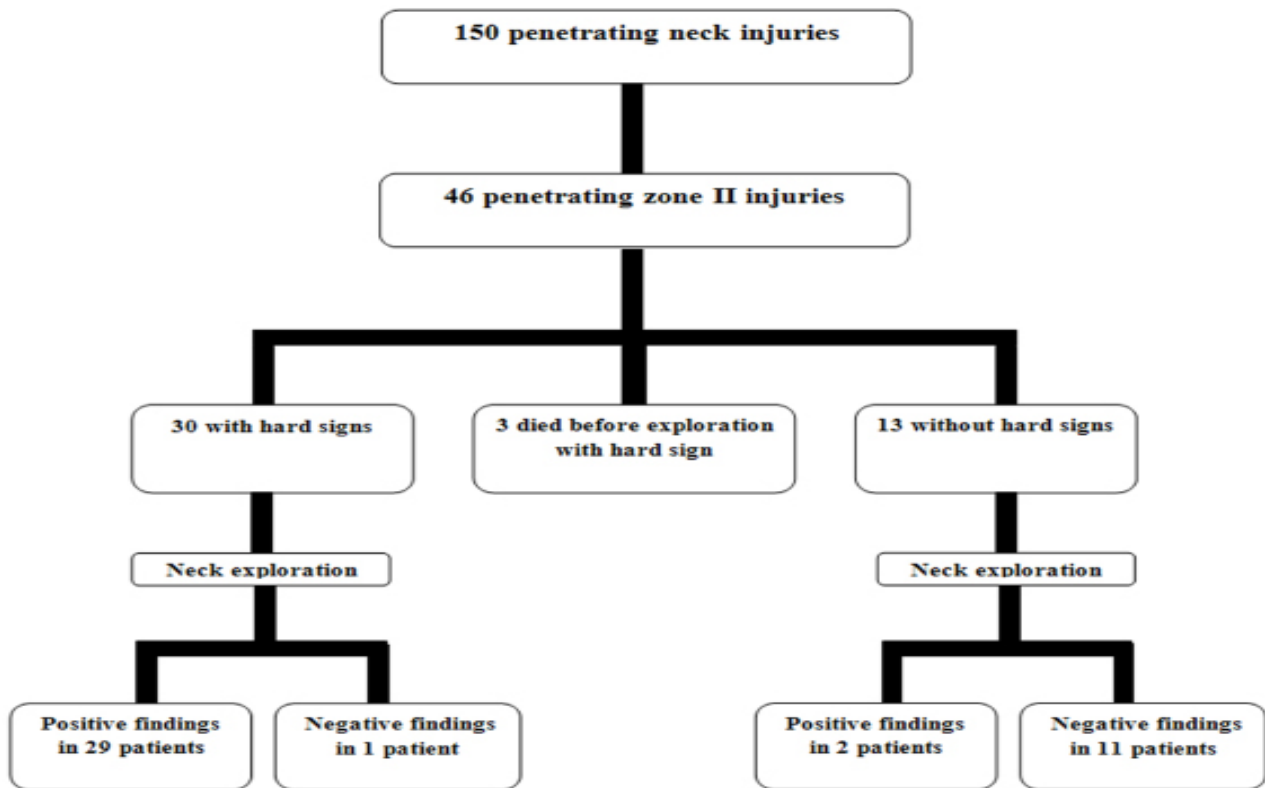


Fig. 1. The flow chart for the patients' inclusion and the results.

[1,6,7]. Applying the selective exploration program, some centers rely on symptoms and clinical findings while others choose paraclinical measures as deciding indicators [1,3,5]. As physical examination is considered as the most feasible measure in assessing patients' status, the aim of this study was to evaluate its role in decision making for exploring patients with penetrating zone II neck injury.

Materials and Methods

Study population

This was a cross-sectional study being performed in a level I Trauma center (Nemazee hospital affiliated with Shiraz University of Medical Sciences) with penetrating neck injuries from 2006 to 2010. The clinical records of all patients older than 14 years referred to our center were retrospectively reviewed. In this study we appraised patients who had zone II neck injury violating platysma. Overall 150 patients were evaluated for the study out of whom, 46 met the inclusion criteria and thus were included in the study. Patients with zone I or zone III, multiple zone injury, and those with superficial zone II injuries were excluded from the study. The study protocol was approved by institutional review board of Shiraz University of Medical Sciences.

Study protocol

The locations of the injury were classified as described

by Saletta *et al.*, [8]. Anatomically the neck was divided into three zones. These include zone I which covers the region from clavicle to cricoid cartilage, zone II extends from level of cricoid cartilage to the angle of the mandible and the third zone proceeding from the angle of mandible to the base of skull. We divided target patients into two groups. The first group included patients who developed hard signs such as active bleeding, expanding hematoma, bruit/thrill, pulse deficit (having no pulse) and central neurologic deficit and the second group were those without any hard signs. Second group comprised patients without hard signs.

Statistical analysis

The statistical package for social science, SPSS for Windows, Version 12 (SPSS, Chicago, IL, USA) was used for data analysis. The data are reported as mean \pm SD or proportions whereas appropriate.

Results

A total number of 150 patients with penetrating neck injury were admitted to our level I Trauma center, of which 123 (82%) were males, aged from 21 to 25 years while the females aged from 17 to 39 years. In regard to the number of wounds, 21 (14%), 5 (3.3%), 12 (8%), and 8 (5.3%) patients had single, double, 3 to 4, and more than 4 injuries respectively. Three patients died before receiving any significant treatment. All 43

patients with pure zone II penetrating neck injuries violating platysma, who met the inclusion criteria, underwent routine mandatory neck exploration.

Thirty patients (70%) had hard sings, of which 29 (67%) also had positive findings on exploration. The exploration of 13 (30%) patients without hard sings revealed positive findings in 2 (4.6 %) cases, while 11 (25.5%) had negative findings. One patient with multiple stab wounds, hard sings and positive findings on exploration died. Positive findings were detected in 31 patients (72%) versus negative findings in 12 (18%). Complications of a penetrating injury such as stenosis, cheloresis, wound dehiscence, abnormal gait, incorporesis and anorexia were found in 7 patients (16 %). Figure 1 shows the flowchart for the patients' inclusion and the results of exploration.

Discussion

Our studies as well as other investigations consider physical examination as a reliable procedure in decision making for exploration of patients with zone II neck injuries involving platysma [4-6,9,10]. On the other hand some others believe that underestimating the necessity of obligatory neck exploration is more unsafe than possible risks of exploration [1,3,4,11]. Other investigators consider a combination of physical and paraclinical findings as a viable choice for selective exploration [1,12,13].

This study reports our experience of a level I trauma centre in Shiraz, Iran, involving patients with zone II penetrating neck injuries affecting platysma. The

incidence of neck injury reported from this centre was 30 patients per year, while annually only 9 patients had pure zone II neck injuries penetrating platysma. Our findings apparently revealed that the number of patients studied were at least 3 times more than those reported from Canada and Finland [3,5]. Also two-third of target patients in this study presented with hard sings such as massive hematoma, whereas this was half or even less than half in some developed countries [3]. At the same time, 96.6% of relevant patients with hard sings had positive findings on exploration that was almost 20% more than that of aforementioned countries [3,5].

In spite of these differences, the outcome of our study was consistent with those of other reports which suggest conducting selective neck exploration in association with careful physical examination [3,6,9,10,14]. Out of 13 (30%) patients with stable vital sign and no hard sings, only 2 (4.6%) showed positive findings on exploration, and from 30 (70%) patients with hard sings, 29 (67%) cases had positive findings on surgical exploration.

In conclusion we believe that following an algorithmic approach by using physical examination seems reasonable in preventing unnecessary exploration in managing patients with zone II penetrating neck injuries. However, further studies including larger sample size and all level I trauma centers in this region are warranted to improve the reliability of the results obtained.

Conflict of Interest: None declared.

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