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Research Article

External neck trauma in Otolaryngology-Head and Neck Surgery

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Summary

Objective

Describe the epidemiological, diagnostic and therapeutic aspects of external neck trauma in our workplace.

Patients and methods

It was a descriptive retrospective study over a period of ten years (2002 - 2011) in Otolaryngology and Neck Surgery services of the University Hospitals of Abidjan. All patients received in ENT for external neck trauma were included.

Results

We recorded during the study period, 4216 patients in our services, whose 95 cases of external cervical trauma, with a frequency of 2.25%. The age of patients ranged from 4-62 years with a mean age of 27.58 years. The range of age between 15-30 years was 53.68 % (n = 51) of the study population. Males accounted for 88.42 % (n = 84) and females 11.58% (n = 11) of patients with a sex ratio of 7.63. The study population consisted of traders in 14.74% (n = 14) of cases, pupils and students in 13.68 % (n = 13) of cases. Injuries occurred during attacks in 35 patients (36.84%) and attempt to autolysis in 28.42% (n = 27) of cases. Among attempt autolysis, 12 patients (44.44%) had a history of psychiatric disorders. Knives were 68.42% (n = 65) of wounding agents used. At the time of admission, bleeding and dysphonia accounted for 36.84% (n = 35) and 28.42% (n = 27) of symptoms. Injuries were open in 83 patients (87.37 %) including 73 cases of penetrating trauma (87.95 %). Blunt trauma were 12.63% (n = 12) of lesions. Neck's Zone I, II and III were affected respectively in 14.74% (n = 14) , 78.95 % (n = 75) and 6.32% (n = 6) of cases. Laryngotracheal and muscle damage were observed respectively in 37.90 % (n = 36) and 33.68% (n = 32) of patients.

Keywords: Trauma; Hemorrhage; Assault

Introduction

The importance of vital anatomical structures present in the cervical region makes the diagnosis and initial management of external neck trauma difficult. These lesions can be life-threatening. Mortality in penetrating forms can reach 12.2% [1]. Despite this high mortality, the literature is relatively poor on this subject. The purpose of this study is to describe the epidemiological, diagnostic and therapeutic aspects of external neck trauma in our workplace.

Patients and Methods

We conducted a descriptive retrospective study over a period of ten years (2002 - 2011) in ENT services and Neck Surgery of the teaching University Hospital of Abidjan. All patients received in ENT for an external neck trauma from 2002 to 2011 were included in the study regardless of their age and sex. Those who had a cervical spine injury were not included in the study. The following parameters were studied:

- Socio-demographic parameters: age, sex, profession;
- Etiopathogenic parameters: patient history, context of trauma, wounding agents;
- Diagnostic parameters: symptoms at the time of admission, type of trauma, cervical area reached, affected organs;
- The type of treatment and outcome.

Results

We recorded that 4216 patients were hospitalized in our services during the study period; 95 cases were due to an external cervical trauma which is a frequency of 2.25%. The age of patients ranged between 4 and 62 years with a mean age of 27.58 years. The ranged age of 15-30 year olds was 53.68% (n = 51) of the study population. Males accounted for 88.42% (n = 84) and female 11.58% (n = 11) of patients with a sex ratio of 7.63. The study population consisted of traders in 14.74% (n = 14) of cases, pupils and students in 13.68% (n = 13) of cases. Injuries occurred during assaults in 35 patients (36.84%) and attempt to autolysis in 28.42% (n = 27) of cases (Table 1). Among the 27 cases of attempted autolysis, 12 patients (44.44%) had a history of psychiatric disorders. Knives were 68.42% (n = 65) of wounding agents used. At admission of patients, bleeding, dysphonia and odinophagia accounted for 36.84% (n = 35), 28.42% (n = 27) and 15.80% (n=15) symptoms. Injuries were open in 83 patients (87.37%) including 73 cases of penetrating trauma (87.95%) (Figure 1). Blunt trauma were 12.63% (n = 12) of lesions. Zones I, II and III of the neck were affected respectively in 14.74% (n = 14), 78.95% (n = 75) and 6.32% (n = 6) of cases. Laryngotracheal and muscle damage were observed respectively in 37.90% (n = 36) and 33.68% (n = 32) of patients (Table 2). The treatment was surgical in 84 patients (88.42%) followed by adjuvant medical treatment. The treatment was purely medical in 11 patients (11.58%). Tracheotomy was performed in 10.52% (n = 10) of cases. A nasogastric feeding tube was put in place in 19 patients (20%) with an average length of 17.09 days (range 6 to 25 days). The evolution after treatment was favorable in 86.32% (n = 82) of cases. Complications were observed in 5.26% (n = 5) patients and we recorded two deaths (2.11%) (Table 3).

Table 1. Distribution of the patients according to the circumstances and wounding agents.

		Frequency	%
Circumstances	Assault	35	36,84
	Autolysis	27	28,42
	Fight	6	6,32
	Accident of the public higtway	5	5,26
	Accident of hunting	1	1,05
	Manslaughter	1	1,05
	Game	1	1,05
	Occupational accident	1	1,05
	War	1	1,05
	Circumstances not specified	17	17,90
Wounding agents	Bladed weapon	65	68,42
	Firearm	19	20,00
	Blunt objects	6	6,32
	Wounding agents not specified	5	5,26

Figure 1. Penetrating wound of the neck by bladed weapon putting in naked of the internal jugular vein (yellow arrow).

Organ	Frequency	%
Laryngotracheal tube	36	37,90
Muscles	32	33,68
Pharynx + œsophagus	13	13,69
Skin + subcutaneous tissue	10	10,52
Vessels	4	4,21
TOTAL	95	100

Table 2. Distribution of the patients according to the affected organs.

Modality		Frequency	%
Simple		82	86,32
Complications	Suppuration	1	5,26
	Pharyngostoma	1	
	Esophago-tracheal fistula	2	
	Tracheal Granuloma trachéal	1	
Lost sight		6	6,32
Death		2	2,11
TOTAL		95	100

Table 3. Distribution of the patients according to evolution.

Discussion

The frequency of external cervical trauma is relatively low in our midst (2.25%). The subjects are predominantly young (mean age 27.58 years). These are subjects with full physical activity which are subject to various traumas. The predominance of young subjects is also reported by Keita et al. in Mali [2]. The male was the most affected as in most series [1,2,3]. Cervical injuries occurred frequently amongst traders (14.74%). This occupational group is often the victim of armed robbery which may cause injury. Circumstances of occurrence of trauma are dominated by assault (38.84%); suicide attempts occupied the second place (28.42%). The decade of war that our country has been through with its corollary of insecurity might explain the high rate of attacks. The impoverishment of the population and unemployment aggravated by the military-political crisis could be the cause of many cases of attempted autolysis. Histories of psychiatric disorders were found in 44.44% of patients who attempted autolysis. This highlights the importance of multidisciplinary care of these patients (ENT and neuropsychiatrist) as recommended by N'gattia [4]. In our study, highway accidents are responsible for 5.26% of injuries but they predominate in the series of Garcia-Zornoza [5] (45%). The density of traffic in Western countries could explain the predominance of accidents on highway. Despite the military-political crisis, only 1.05% of cervical injuries occurred during the war. This low proportion may be related to the existence of a military hospital in Abidjan where most war casualties were oriented. Cold steel are the most wounding agents used (68.42%). There were knives, machete, razor blades and broken bottles. After stab injuries, firearms are the second type of wounding agents involved in our series (20%). These two categories of wounding agents generally cause open injuries. They constituted 87.37% of our cases with 87.95% of penetrating trauma. Garcia-Zornoza [5] reported 68% of open injuries. The severity of injuries caused by firearms depends on the type of weapon and the shooting distance. The high-velocity weapons and shooting from short distance [5] cause severe lesions. Blunt objects that are involved in 6.32% of our patients readily generate non-penetrating trauma. These blunt objects can be a solid surface such as the dashboard of a vehicle, a rope used for strangulation or various objects and surfaces encountered during an accidental fall [6]. The main symptoms on admission of patients were hemorrhage (36.84%), dysphonia (28.42%) and odynophagia (15.79%). The importance of these signs may vary according to the organ affected. Lesions interested mostly area II of neck (78.95%) followed by away from the area I (14.74%) and area III (6.32%). The vulnerability of area II of neck is accepted by most authors [1, 3, 7]. The laryngotracheal tube and muscles were the most affected organs (respectively 37.90%, 33.68%). External larynx and trachea's trauma are predominant in our series but they are rare according to several authors [5,8,9,10]. According to these authors, this rarity is explained partly by the protective role of the mandible and sternum on the laryngotracheal tube and secondly by the elasticity of the laryngeal cartilages that are resistant to weak shock. According to Kim et al [9], the high mortality of larynx and trachea's injuries before the arrival of patients at the hospital also explains their apparent rarity. In the absence of life-threatening emergency, the nasofibroscopy and imaging (computed tomography, magnetic resonance imaging) are required for the diagnosis [10,11]. However, the ferromagnetic character of ammunition contraindicated formally the achievement of magnetic resonance imaging in case of ballistic wound [12]. Vascular injuries represent 4.21% of injuries in our series. They are usually secondary to penetrating neck trauma [5]. These lesions are most often encountered in the cervical area I [10]. Their diagnosis is usually evident in front of external bleeding, hematoma, abolition of pulse, a state of unexplained shock. If venous lesions usually do not cause major problems for their care, their main risk of progression is the occurrence of air embolism [7]. The diagnosis of pharyngo-esophageal lesions is difficult in the initial state because they are often masked by respiratory and vascular lesions [5]. Symptoms for these lesions are the presence of dysphagia, odynophagia, hematemesis, and subcutaneous emphysema [5,7,13]. The diagnosis can be confirmed by transit pharyngoesophageal with a contrast product, esophagoscopy in flexible or rigid tube [5]. Diagnosis delay influences the occurrence of complications and mortality of these lesions [1,14]. Indeed, injury pharyngoesophageal overlooked or ignored may be complicated by localized sepsis progressing to serious complications such as mediastinitis, esophago-tracheal fistula, multiple organ failure [7,8,13]. Therapeutically, the management was surgical in most of our patients (88.42%). It consisted of surgical exploration, debridement and repair of lesions most often in the operating room under general anesthesia. The proportion of surgical treatment in our study is high in relation to that of Zornoza-Garcia et al. [5] who practiced surgery in 59% of their patients. The systematic exploration of all cervical surgical wound we practice may explain this high rate of surgical treatment. Tracheotomy was performed in 10.52% of our patients. We do it under local anesthesia in front of an airway obstruction or to serve as a means of intubation for general anesthesia for severe laryngotracheal injuries. According to Menard et al. [8] the first tracheotomy is the solution

that seems to give maximum safety if an emergency response is required as part of polytrauma. After surgery, adjuvant medical treatment consisted of antibiotics, steroids, painkillers and sometimes the introduction of a nasogastric feeding tube. We used the nasogastric feeding tube in 19 patients (20%). It was set up systematically for pharyngeal and esophageal proven injuries and in case of high presumption of gastrointestinal lesions. The duration ranged from 6 to 25 days with an average of 17.09 days. Medical treatment was sometimes the only performed in some of our patients (11.58%). These were patients with closed cervical lesions apparently benign. The outcome was favorable in the majority of our patients (86.32%). We recorded two deaths (2.11%): the first is due to septic shock complicating unrecognized pharyngeal injury and the second, a massive cervicothoracic emphysema.

Conclusion

External neck injuries are a vital emergency. Assaults and suicide attempts are the main circumstances of occurrence of these injuries in our country. Their management should be immediate to reduce complications and mortality.

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