http://dx.doi.org/10.1590/1981-22562017020.160183

Elderly patients with facial trauma: a 10 year review

Mateus Giacomin[1]
Ferdinando De Conto[2]
Simone Pinheiro Siqueira[3]
Pedro Henrique Signori[1]
João Matheus Scherbaum Eidt[1]
Renato Sawazaki[2]

Abstract

Objective: to analyze the epidemiological profile of geriatric patients with facial trauma treated at a Maxillofacial Surgery Department in southern Brazil over a period of 10 years. *Methods:* a retrospective analysis of the medical records of patients aged over 60 years treated for facial trauma in the period from January 2001 to December 2010 was performed. *Result:* of a total of 1,385 analyzed medical records of patients with facial trauma, 86 (6.2%) belonged to the group aged 60-89 years. The male gender was the most affected and the age group 60-69 years was the most frequently involved. The middle third was the most affected, and the zygomatic bone was the most commonly fractured. *Conclusion*: special attention should be given to the 60-69 age group, as while such patients present physiological changes inherent to aging, they remain active in society and exposed to risk factors for facial trauma.

Keywords: Surgery, Oral. Epidemiology. Health Services for the Aged.

[1] Pontifícia Universidade Católica do Rio Grande do Sul, Faculdade de Odontologia, Programa de Pós-Graduação em Odontologia. Porto Alegre, RS, Brasil.

[2] Universidade de Passo Fundo, Faculdade de Odontologia, Departamento de Cirurgia e Traumatologia Bucomaxilofacial. Passo Fundo, RS, Brasil.

[3] Fundação para Reabilitação das Deformidades Craniofaciais (FUNDEF), Departamento de Ortodontia. Lajeado, RS, Brasil.

Correspondence
Mateus Giacomin
E-mail: mateus.giacomin@hotmail.com

INTRODUCTION

The increase in the active elderly population is likely to be reflected in the profile of patients receiving care in the area of oral and maxillofacial traumatology[1]. Today, those aged between 20 to 29 years most often receive care through this specialty[2,3] with the elderly representing a smaller portion of the total number of patients[1,4]. Among this group, the main etiological factors of trauma are falls and traffic accidents[3]. There are a large number of publications on the epidemiology of facial trauma from around the world[3-5], with the results varying in terms of etiology, age of patient and gender, depending on factors that include socioeconomic conditions and educational and cultural level[4]. The indices vary from country to country, according to social, cultural and environmental factors[5].

Trauma to the facial region often results in injuries to the soft tissue, teeth, and the major skeletal components of the face, including the mandible, maxilla, zygoma, nasoorbitoethmoidal complex and supraorbital structures. There may also be injuries to other parts of the body. Dealing with and rehabilitating facial trauma patients involves a detailed understanding of the types, methods of assessment and surgical treatment of facial injuries[2,3].

Although elderly patients are subject to the same trauma mechanisms as other age groups, they are unique in their responses to these injuries. The physiological, metabolic and biomechanical changes that occur with age can affect the ability to resist stress, as well as increasing the incidence of complications and reducing the chance of survival[6]. In general, women are subject to a greater loss of mandibular mineral bone content than men. The presence of osteoporosis in the maxillary bones is still under debate in literature[7]. Trauma care should take into account the systemic condition of these patients and the care provided to them should differ from that given to other patients[6].

The objective of the present study was to analyze the epidemiological profile of geriatric patients with facial trauma treated at an Oral Maxillofacial Surgery Service in the south of Brazil over a 10-year period (January 01, 2001 to December 31, 2010).

MATERIALS AND METHODS

This retrospective observational study was carried out at the Hospital São Vicente de Paulo in Passo Fundo, Rio Grande do Sul, Brazil in conjunction with the Serviço de Arquivo Médico e Estatístico (Medical Records and Statistics Service) (SAME), where the medical records of geriatric patients treated by professionals from the field of oral maxillofacial traumatology during a ten (10) year period between January 1, 2001 and December 31, 2010 were analyzed.

Data collection was performed by a single researcher, who collected the following data from the SAME medical records: etiological agent of the lesion, age and gender of the patient, location of the fractures and, above all, whether or not some kind of traumatic injury associated with facial trauma occurred. Patients with lesions exclusively in the soft facial tissue were excluded from the study.

The geriatric population, which had an initial age of 60 years, was divided into three groups, with the first group containing individuals aged from 60 to 69 years, the second elderly persons aged from 70 to 79 years and the last group patients aged from 80 to 89 years. Patients were also classified as male or female. In terms of origin, the city of Passo Fundo was considered the referential center and patients from other cities were classified as from "other localities" due to the influence exerted by Passo Fundo in the region in terms of health care.

The etiological agents were divided into six groups: aggression, falls, traffic accidents, sports accidents, work accidents and others. Injury by firearm, domestic violence, assault and physical fights were included under aggression. Being knocked down and motorcycle, bicycle and car accidents were considered under the item traffic accidents. The others group includes accidents with animals and removal of teeth. This study was submitted to and approved by the Research Ethics Committee of the Universidade de Passo Fundo (the University of Passo Fundo) (UPF) under number 342/2011.

The chi-square test was chosen for statistical analysis, with significance set at $p<0.05$, and the variables Gender and Age Group were crossed with each of the other variables.

RESULTS

Of a total of 1,385 medical records of patients with facial trauma analyzed at the Hospital São Vicente de Paulo in the city of Passo Fundo, Rio Grande do Sul, 86 were aged 60-89 years, representing about 6.2% of the medical records. Of these 86 records of geriatric patients, 57 were male and 29 were female.

Fifty patients were aged 60-69 years, 26 were aged 70-79, and ten were aged 80-89 years. In general, the group aged 60-69 years was the most affected, representing 58.1% of the cases evaluated. Men predominated in all the age groups.

In the 60-69 years age group, 68% of the cases were male and 32% were female, while the 70-79 years group consisted of 65.3% men and 34.6% women, and the 80-89 years group comprised 60% men and 40% women of the total number of cases evaluated. There was a higher prevalence of men, independent of age (Table 1).

Of the fracture sites distributed according to age group, the zygomatic was the most affected location in the 60-69 years group, affecting 15 patients, there was a predominance of mandible fractures in the 70-79 years age group, occurring in 11 patients, and the nose was the most fractured site in the 80-89 years age group, with four patients affected. There was a significant difference between age and nose and maxilla trauma (Table 2).

In the 60-69 years age-group traffic accidents accounted for 32% of cases, while in the same group falls represented 26%. In the 70-79 years age group falls represented 50% of cases. In the 80-89 years age group, falls were the etiological agent in 60% of cases. Only the etiological agent differed significantly between the age groups (Table 3).

Table 1. Distribution of cases according to age group and gender. Rio Grande do Sul, 2011.

Gender	Age range (years) 60-69 n (%)	70-79 n (%)	80-89 n (%)
Male	34 (68)	17 (65.3)	6 (60)
Female	16 (32)	9 (34.6)	4 (40)

Table 2. Location of trauma according to age range. Rio Grande do Sul, 2011.

Trauma	Age range (years) 60-69 n(%)	70-79 n(%)	80-89 n(%)	*p*
Zygomatic	15 (25.8)	6 (18.1)	2 (20)	0.711
Jaw	10 (17.2)	11 (33.3)	2 (20)	0.145
Orbit	8 (13.7)	8 (24.2)	1 (10)	0.219
Nose	11(18.9)	2 (6)	4 (40)	0.019*
Jaw	2 (3.4)	0 (0)	1 (10)	0.036*
Le Fort	9 (15.5)	4 (12.1)	0 (0)	0.797
NOE	1 (1.7)	2 (6)	0 (0)	0.769
Dentoalveolar	2 (3.4)	0 (0)	0 (0)	0.478

* Significant

Table 3. Etiological agent according to age group. Rio Grande do Sul, 2011.

Etiological Agent	Age range (years) 60- 69 n (%)	70- 79 n (%)	80-89 n (%)	*p*
Traffic Accident	16 (32)	6 (23.1)	2 (20)	0.598
Aggression	9 (18)	2 (7.7)	1 (10)	0.436
Falls	13 (26)	13 (50)	6 (60)	0.035*
Accident at Work	1 (2)	2 (7.7)	0 (0)	0.358
Others	3 (6)%	1 (3.8)	1 (10)	0.776
Not described	8 (16)	2 (7.7)	0 (0)	0.267

* Significant

Ten medical records of the 86 patients were classified as *not-described,* representing 11.6% of cases.

The most common injuries in all three age groups were excoriations, followed by injuries associated with the skull, of which there were four in the 60-69 years age group, five in the 70-79 years age group and one in the 80-89 years age group. The age group with the highest number of associated injuries was the 60-69 years group (58.14%), followed by the 70-79 years group (30.23%) and the 80-89 years age group (11.62%). No abdominal trauma was recorded in any of the three age groups. Age did not significantly influence the type of associated injury (Table 4).

Table 4. Distribution of cases according to age group and injury. Rio Grande do Sul, 2011.

Injury	Age group (years) 60-69 (%)	70-79 (%)	80-89 (%)	*p*
Upper Limb	1 (2)	1 (3.8)	0 (0)	0.311
Lower Limb	0 (0)	1 (3.8)	0 (0)	-
Skull	4 (8)	5 (19.2)	1 (10)	0.345
Chest	0 (0)	0 (0)	1 (10)	-
Spine	1 (2)	0 (0)	0 (0)	-
Excoriation	9 (18)	6 (23.1)	2 (20)	0.870
Absent	35 (70)	13 (50)	6 (60)	0.170
Abdomen	0 (0)	0 (0)	0 (0)	-

DISCUSSION

The maxillofacial surgeon should be prepared to treat elderly patients, who have specific systemic conditions that require identification. Cardiovascular diseases and pulmonary disorders are common and may alter or limit treatment to less invasive therapy. Another condition frequently found among the elderly, especially in elderly women, is osteoporosis, which impairs the healing of fractures due to inadequate bone matrix formation. The elderly also suffer anatomical alterations that can change the modality of treatment, such as edentulism[5].

The present study found out that facial trauma occurred more frequently in men in the three age groups analyzed, a finding which agrees with other authors[6,8]. This suggests that there is a greater occurrence of facial trauma in males among all mechanisms of cause.

The age group most affected by facial trauma was 60-69 years. This can be explained by the greater number of elderly people in this age group than in other age groups,[1] in addition to the fact that patients in this age group are generally more active and so are exposed to many of the same risk factors as the active adult population. These specific characteristics of this age group explain the differences found in relation to the traumatic agent and the location of fractures in this group. The most common cause of facial injuries among the elderly was falls, which agreed with other studies[2,6,9-12], although traffic accidents were the most frequent cause of facial traumas among the 60-69 years age group.

Lifestyle and age-related habits predispose the elderly, as they grow older, to domestic accidents and lower kinetic energy traumas, while reducing the chances of trauma due to interpersonal violence and sports accidents. Due to the elderly spending more time in the home, most falls are household accidents[13]. Characteristics inherent to the aging process, such as decreased proprioception, changes in motor response, tremors, and decreased visual and auditory acuity predisposes to the elderly to a greater number of falls and stumbles[2,11,14]. Cardiovascular problems may also be related to falls, and many elderly people are particularly vulnerable to strokes[10]. There is also a decrease in both bone mass and muscle strength due to osteoporosis and other changes in bone metabolism, increasing the susceptibility of the elderly to bone fractures[14-16].

Of the fracture sites distributed according to age group, the zygomatic bones were the most affected. The anatomical location of these bones in the facial skeleton predisposes them to trauma, due to their lateral projection[3]. The higher incidence of fractures in the middle third in elderly patients is in agreement with other studies[7,10,16,17]. The low incidence of mandibular fractures seems to be related to the etiological agents of the trauma, and only two cases of dentoalveolar fractures were found, a fact that is explained by the high incidence of edentulism among elderly patients[6,10]. Because this traumatic agent involves lower kinetic energy, facial fractures in the elderly tend to present less displacement, with a greater predisposition to non-surgical treatments[7,16] .

These specific epidemiological characteristics of the elderly, with a reduced number of mandibular fractures and a higher incidence of middle third fractures, also help to explain the lower number of surgical interventions, with non-surgical treatment methods often preferred[16]. The elderly also tend to have less aesthetic concerns, and value functional issues more[8]. The presence of physiological co-morbidities inherent to aging interferes with the choice of treatment of facial fractures[16]. The decrease in the physiological reserves of these patients results in a reduced ability to compensate for the stress associated with anesthesia and surgery[6,8].

The surgeon should be aware of the anatomical and physiological changes inherent in aging when planning surgical procedures. The significant presence of systemic diseases in the elderly population interferes with the healing process of wounds, increasing morbidity rates, complications and leading to longer hospital stays[6,8]. Surgical treatment should seek to restore function and aesthetics, but in some cases the comorbidities present will only allow the treatment of emergencies, and definitive treatment should be considered after the stabilization of the condition of such patients[13].

Among the associated injuries, skin excoriations were the most frequent in the present study, followed by injuries to the skull. There was a greater prevalence of associated injuries as age increased. According to Toivari et al., associated injuries are more common in elderly patients than in young adult patients, with more frequent cerebral concussions and higher mortality rates[17].

The low number of elderly patients treated for facial trauma during the period analyzed is a limitation of the present study.

CONCLUSION

Patients aged 60-69 years were the most affected by facial trauma, which occurred more frequently in males. The zygomatic bones were the most frequently fractured among all the age groups of the study. In terms of etiological factors, traffic accidents were the most frequent factor in the 60-69 years age group. For patients aged over 70, falls were the main etiological factor.

The tendency is that the elderly population will increase in coming years. Combined with the more active profile that this group are assuming in society, they will be more exposed to risk factors for facial trauma and require specific management. Special attention should be given to the 60-69 years age group, as while they undergo the physiological changes inherent to advancing age, they remain active in society and more susceptible to trauma.

Knowing that complications, surgical morbidity, cost of treatment and hospitalization time may be higher in this group, health care teams should be properly prepared to provide care and to guide the elderly and caregivers in the prevention of trauma.

REFERENCES

1. Instituto Brasileiro de Geografia e Estatística. Censo 2010 [Internet]. [acesso em 01 ago. 2016]. Rio de Janeiro: IBGE, 2016. Disponível em: http://censo2010.ibge.gov.br/.
2. Wulkan M, Parreira JR, Botter DA. Epidemiologia do trauma facial. Rev Assoc Med Bras. 2005;51(5):290-5.
3. Eidt JMS, Conto FD, Bortoli MMD, Engelmann JL, Rocha FD. Associated injuries in patients with maxillofacial trauma at the Hospital São Vicente de Paulo, Passo Fundo, Brazil. J Oral Maxillofac Res. 2013;4(3):46-8.
4. Silva JJL, Lima AAAS, Melo IFS, Maia RCL, Pinheiro Filho TRC. Trauma facial: análise de 194 casos. Rev Bras Cir Plást. 2011;26(1):37-41.
5. Rezaei M, Jamshidi S, Jalilian T, Falahi N. Epidemiology of maxillofacial trauma in a university hospital of Kermanshah, Iran. J Oral Maxillofac Surg, Med Pathol. 2017;29(2):110-5.
6. Dias E, Gomes ACA, Gomes DO, Vianna K, Melo P. Trauma no idoso. Rev Cir Traumatol Buco-Maxilo-Fac. 2001;1(2):7-12.
7. Velayutham L, Sivanandarajasingam A, O'meara C, Hyam D. Elderly patients with maxillofacial trauma: the effect of an ageing population on a maxillofacial unit's workload. Br J Oral Maxillofac Surg. 2013;51(2):128-32.
8. Cillo JEJ, Holmes TM. Interpersonal violence is associated with increased severity of geriatric facial trauma. J Oral Maxillofac Surg. 2016;74(5):1-7.
9. Berg BI, Juergens P, Soerensen Y, Savic M, Zeilhofer HF, Schwenzer-Zimmerer K. Traumatology of the facial skeleton in octogenarian patients: a retrospective analysis of 96 cases. J Craniomaxillofac Surg. 2014;42(6):870-3.
10. Vade CV, Hoffman GR, Brennan PA. Falls in elderly people that result in facial injuries. Br J Oral Maxillofac Surg. 2004;42(2):138-41.
11. Campos JFS, Poletti NAA, Rodrigues CDS, Garcia TPR, Angelini JF, Von Dollinger APA, et al. Trauma em idosos atendidos no pronto atendimento da emergência do Hospital de Base. Arq Ciênc Saúde. 2007;14(4):193-7
12. Toivari M, Suominen AL, Lindqvist C, Thorén H. Among patients with facial fractures, geriatric patients have an increased risk for associated injuries. J Oral Maxillofac Surg. 2016;74(7):1403-9.
13. Kloss FR, Tuli T, Hächl O, Laimer K, Jank S, Stempfl K, et al. The impact of ageing on cranio-maxillofacial trauma: a comparative investigation. J Oral Maxillofac Surg. 2007;36(12):1158-63.
14. Kloss FR, Gassner R. Bone and aging. Effects on the maxillofacial skeleton. Exp Gerontol. 2006;41(2):123-9.
15. Gassner R, Tuli T, Häch H, Rudusch A, Ulmer H. Cranio-maxillofacial trauma: a 10 years review of 9543 cases with 21067 injuries. J Oral Maxillofac Surg. 2003;31(1):51-61.
16. Imholz B, Combescure C, Scolozzi P. Is age of the patient an independent predictor influencing the management of cranio-maxillo-facial trauma?: a retrospective study of 308 patients. Oral Surg Oral Med Oral Pathol Oral Radiol. 2014;117(6):690-6.
17. Toivari M, Helenius M, Suominen AL, Lindgvist C, Thorén H. Etiology of facial fractures in elderly finns during 2006-2007. Oral Surg Oral Med Oral Pathol Oral Radiol. 2014;118(5):539-45.

Received: October 05, 2016
Reviewed: June 14, 2017
Accepted: August 29, 2017