Epidemiological Profile and the Prevalent Anatomic Regions of Some Maxillo Facial Fractures Treated at National Trauma's Centre

Alma Teliti

MaxilloFacial Surgeon
National center of Trauma, Albania
telitialma@yahoo.it

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Abstract

The aim of this study is to investigate the epidemiological profile and the prevalent anatomic regions treated at National Center of Trauma during January 2011 to November 2011. Material and methods : The dates of 42 patients with maxillofacial trauma treated during this period were analyzed according to sex, age, cause of injury and region of facial fracture. Statistics : Descriptive statistics, Chi-square Test. Main age and standard deviation were 29,6 years and 11.44. Most patients were male (90.2 %). Marital status : 44.8 % single and 45.2 % married. 95.2 % of patients had the primary and middle education. The majority of fractures were in the 21-30 age group (57.1 %) . The main causes of trauma were traffic accidents (65.31 %); a distribution of traffic accidents according group age was found ($\chi^2 = 23.14$, $p = 0.0032$). 57.7% of patients had only one fracture; 42.3 % had two fractures : 9.6 % had fractures of paramedian and ATM, 10.9 % had fractures of paramedian and angulus; 21.8 % had fracture of paramedian and ramus. The most common sites of fractures were the mandibulae : paramedian 40.8%, angular 26.3%, ramus 12.4 % and ATM 12.4 %. During the periode a distributions according group age of paramedian and angulus were founded : $\chi^2 = 12.23$ dhe $p = 0.0318$ (paramedian) and $\chi^2 = 15.15$ dhe $p = 0.0097$ (angular). The most of surgical intervets were treated by method of osteosynthesis.

Keywords: fractures, etiology, osteosynthesis, significant level (α - level)

Introduction

Maxillofacial fractures actually represent in the world a great number of surgical and orthopedic treatments. The various scholars introduce systematically different

cases of fractures of contents of Mandibula and Maxilla ^{[1],[2],[5],[6],[7],[8],[9],[10],[12],[15],[16]}. The Ethological and epidemiological assessment of the damages and maxillofacial fractures represent a special interest to identify the prospective trend of their occurrence, preventive measures and effective medical policies. In this article it is aimed to be given an assessment for the epidemiological profile and the prevalent anatomic regions of some maxillo facial fractures treated at National Trauma's Centre (Albania) for the period February 2011-November 2011.

Method

In this study are observed data for 42 patients that are treated during this period with one or more surgical intervention.

Results

There have been accomplished 52 surgical treatments, 57,7% of the patients have been treated for a fracture of the mandibule or maxilla, 42.3 % of the patients have been treated for fracture of the paramedian and ramus,paramedian and angle or paramedian and ATM. The distribution of the traumas according to sex is 90.2% are male and 9.8% females, the ratio male females is approximately 10:1.The highest percentage of the fractures belongs to the middle Albania. The majority of the treated fractures belong to the paramedian region (43.4%), angular region (24.5%), ramus 11.3% and ATM 13.2%. Some patients (42.3 %) are treated for two fractures : 10.9% for paramedian and angulus, 9.6 % for paramedian and ATM, 21.8 % for paramedian and ramus.Surgical treatments make 90.2% of the cases and 9.8% of the cases are orthopedic. The group age 21-30 years makes 36.6% of the fractures and is the most affected age.

Discussion

The achieved results in the investigated period speak about the continuity of some typical etiological and epidemiological data evidenced those recent years at the maxillo facial servis of National Center of Trauma. The most affected target group of males with maxilla facial is the age 20-24 years. The road accidents comprise the main etiological factor, among the causes of the maxilla facial traumas. From three studies undertaken in the periods December 2007-June 2008, January 2010-October 2010 and January 2011-November 2011 is observed in this study that during the last period we have an increase of the ratio male : female in relation to the two first studies: the approximant values of the most affected age, and a reduce of 7.6% of the number of the road accidents. The percentage for male, female, the group age 20-40 years and the road accidents are given on the table following

Period of study	The percentage for Male and Female	The percentage for the group age 20-24 years	The percentage according to the road accidents
December 2007- June 2008	77.5 % Males 22.5% Females	32.4 %	34.6%
January 2010- October 2010	71.43 % Males 28.57 %	65 %	85.6 %
January 2011- December 2011	90.2 % Males 9.8 % Females	65.86 %	78 %

In a comparative analysis of the distribution of the etiological factors for the period January 2011-November 2011 with the period January 2010-October 2010 results to have a shrink with 7.6% of the road accidents (from 85% in 78.7%), a reducing with 2.3 % of the falling from heights with a reduction of 5.3 of the cases caused by physical violence

The distribution of the etiological factors in percentage for period January 2010 - October 2010 and January 2011-November 2011 is characterized by figures given on the table following.

Period of study	Road accidents	Falling from height	Physical Violence	Miscellaneous
January 2010 October 2010	85.6 %	7 %	4.2%	3.2 %
January 2011 - November 2011	78.7 %	4.7 %	9.5%	7.1%

Analyzing the results for the road accidents in two periods is noted that in both periods is seen that they are higher than the data presented in last ten years in many various studies : 30.62 % in Hospital General Blumenau SC (Portugal) ^[13]; 45.7 % in Brazil ^[13] 45.7 % in Kosovo ^[17] 37 %, in Roma (Italy) ^[17], 26 % in Finland ^[17], 56 % in Pakistan ^[17], Loxha. P.M ^[17], etc.

The world trend of last ten years is minimization of road accidents and number of their victims. By European Observation on Health Systems and Policies ^[11] the last 30 years the number of victims from road accidents has presented small differences from on year to another, the trend being descendant. In France from 17 victims per 100.000 population in 1990 are observed 8 victims in 2005 ; in Latvia from 40 victims per 100.000 population in 1990 are observed 17 victims in 2005; in Finland from 11 victims per 100.000 population in 1990 are observed 5 victims in 2005; in Italy from 14 victims per 100.000 population in 1990 are observed 10 victims in 2005; in Hungary from 23 victims per 100.000 population in 1990 are observed 11 victims in 2005; in Estonia from 33 victims per 100.000 population

in 1990 are observed 10 victims in 2005 ; in Czech Republic from 12 victims per 100.000 population in 1990 are observed 10 victims in 2005; in Poland from 21 victims per 100.000 population in 1990 are observed 12 victims in 2005. The minimization of number of victims from road accidents in European countries is due to the strong official measures, effective medical policies and improvement of vehicle's and road's quality.

Analysing the results for road traffic accidents it is noted that the high number is too due to the big increasing of vehicle's number during from 1998. By statistical figures of Statistical Institut (INSTAT) in Albania the number of vehicles is increased from 129.707 in 1993 to 410.629 in 2011.

Year	Road vehicles	Cars	Buses/ Minibuses	Truck and Vans	Road tractors	Motorcycles
1993	129.707	56.728	7.582	31.084	8.251	15.097
1998	145.201	90.766	9.227	34.378	2.731	4.109
2003	263.901	174.782	21.066	46.809	1.896	4.877
2008	378.060	264.828	6.645	79.054	1.987	18.329
2011	410.629	294.729	6.698	71.278	761	24.009

The increasing of number cars per 1000 population during periode 1998-2011 is given by chart following

The car's number per 1000 population

Chart 1

Actually in Albania the car's number per 1000 population is 121, lower than some neighbouring countries as Serbia (227), in Macedonia (144) ,Bosnia –Herzegovina (135).

Regardless the high number of the road accidents in the roads of Albania the number of the victims by those accidents is not very high and Albania is actually compared with the neighbouring countries. The number of victims per 100.000

population presented by the European Status Report on Road Safety in (2007) is 13.9 for Albania; 14.9 for Greece 13.2 for Bullgary; 12.7 Rumany; 10.9 for Bosnia and Herzegovina; 13.6 for Croatia; 9.8 for Serbia; 10.4 for Sillovenia, 13.4 for Turkey.

In the road accidents are included individuals of the various group ages., but the most affected is the group age 21-30 years (37.5%). From this study results that the distri -bution of the accidents according to the group ages is characterized by figures : 25 % for 0-20 years, 37.5% for 21-30 years,28.12% for 31-40 year,6.25 % for 41-50 year and 3.13% for 51-60 year.A graphical illustration in the percentage of distribution of road accidents by group age is given by chart 2

Chart 2

For the period of the study the road accidents are given with a meaningful statistical distribution according to the target group because from the application of Chi-square test result the values $\chi^2 = 23.14$, $p = 0.0032$.

The patients of the group 21-30 years group have had not only fractures caused by road accidents, but also fractures caused by physical violence and falling from heights. The fractures by the physical violation make 9.5% of the cases.

Even though it is a higher figure than the period January 2010–October 2010 it is considered still lower than some of the other countries: : 22.6 % ^[7], 38.58 % ^[8], 29 % ^[21], 24.3 % ^[14]. A low figure is also evidenced also for the fractures caused by the falling from the heights. They make only 4.7% of the cases and this figure reflects the special official measures that are taken those last years toward the companies of the construction.

The figure 4.7 % is lower by the figures in some other countries. In various studies are found figures that are much higher: 20.1 % in Kosovë ^[17] for the period 2001-2005, 17.9 % in Brazil (for year 2004), 15 % in Australia (for 2004) 21.4 % in China (for 2001), 23 % in Pakistan (for 2007). Jose .C.M.Jouniors ^[13] gives the figure 11.26% in Portugal (for period 2004-2009), the Israel Center for Trauma Emergency ^[21] gives the figure 27 % in Israel (for period 2000-2003), B. Erol ^[7] gives the figure 36.9 % in Turkey for period 1978-2002).

During the period are made 52 surgical intervention, 23 paramedian treatments 13 treatment of the angulus, 6 ramus treatment, 1 treatment of Le Fort I, 3 treatment of Le fort II, 7 treatment of ATM

A graphical illustration in the percentage of distribution of surgical treatment is given by the chart 3

Chart 3

During the periode 92.4 % are treated for fractures of mandibula and 7.6 % for fractures of maxilla. This distribution is different from many results abroad ^{[3],[4],[5],[13],[14],[19],[20]}. It is noted that 57.7% of the patients are treated only for a fracture, 42.3% of the patients treated with double fractures: 9.6% with fractures of paramedian and ATM, 10.9% with fractures of paramedian and angulus and 21.8% of the patients are treated for fracture of the paramedian and ramus. The distribution of the fractures according to group-age are given on the table 4

Group age	Paramedian	Angulus	Ramus	Le Fort I	Le Fort II	Le Fort III	ATM
0-20 years	21.75%	7.7 %	-	-	50%	100%	16.6 %
21-30 years	30.4%	53.8 %	16.6%	100%	-	-	50.2%
31-40 years	26.1%	7.7 %	49.8%	-	-	-	16.6 %
41-50 years	21.75 %	3	33.6%	-	-	-	16.6%
51-60 years	-	7.7 %	-	-	-	-	-
61-70 years	-	-	-	-	-	-	-

Table 4

As we can see from the table we have a spread of the values in the case of the paramedian and angulus fractures. From the application of the criteria χ^2 (Chi Square) for the spread of the fractures are taken the values $\chi^2 = 12.23$ and $p = 0.0318$ for paramedian, $\chi^2 = 15.15$ and $p = 0.0097$ for angulus.

A distribution of the fractures according to the geographical areas is noted too. The results of the study are given on the table 5

Fracture	North of Albania	Middle Albania	South Albania
Paramedian	8.7 %	73.9 %	17.4 %
Angulus	7.7 %	84.6 %	7.7 %
Ramus	16.6 %	66.2 %	16.6 %
Le Fort I,II,III	-	100 %	-
ATM	-	83.3 %	16.7 %

Table 5

The highest percentage 80.8% of the fractures belongs to the middle Albania, that is due to high demographic movements; high concentration of population on the big cities Tirana and Durres and the big number of cars in these cities. Regarding to educational level of the patients treated results that 92% are of elementary education or secondary education. Regarding their marital status results that 45.2 % are married and 44.8% are single. Two cases were children less than two years. Most of the patients were employed in part time jobs.

Conclusions

In the present study, the traffic accidents are actually most prevalent etiological factor during the year 2011. This fact is a big national problem for the Albanian Government. The cost of the traffic accidents from 1993 is € 106 million. Regardless of non high number accidents treated in maxillofacial services of National Trauma's Centre the number of them that are treated in this Centre during 2011 year for different fractures is the high number. The number of traffic accidents in Albania in 2011 is 1878 and 322 of them are killed. The most of the accidents have happened due to imprudence of the drives, violation of traffic rules from the pedestrians., driving over the speed limit and due to drunk driving. The significant association of maxillofacial trauma with traffic accidents and male reinforces the need of educational strategies for males and the development of policies for the prevention and reduction of significant number of trauma cases in our country. It necessary to start the implemantation of plan program of the National Strategy of Road Safety approved from Albanian Government on February 2011.

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