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Traumatology of the facial skeleton in octogenarian patients: A retrospective analysis of 96 cases

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ABSTRACT

Aim: The aim of this retrospective study was to evaluate the frequency and distribution of maxillofacial trauma patients over 80 years, with regard to type and environment of accidents as well as treatment and complications.

Patients and methods: Data for 94 patients (96 cases; aged 80–94 years) with maxillofacial fractures were retrospectively analysed.

Results: Data of 30 male and 64 female patients with an average age of 85 years were analysed. In 90% of the study population, the cause of fractures was a fall, followed by traffic accidents (9%) and assault (1%). Seventy-two patients had fractures of the midface, 10 had factures of the mandible, 9 had fractures of both the midface and mandible and 5 had fractures of the neurocranium and midface. Surgical intervention was required in 57% of the patients. Post-operative complications were: four cases of diplopia, two cases of infected plates, four cases of lower eyelid ectropion and in one case a retrobulbar haematoma.

Conclusion: Facial trauma in the elderly can often be treated conservatively unless the patient complains of functional problems. Due to co-morbidities, special attention should be paid to hypertension, anticoagulant agents and the surgical approach.

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1. Introduction

In industrialised countries, the average age of the population continues to increase. It is predicted that, in 2050, 25% of the American population will be above the age of 65 years. This statistic is also significant in European countries such as Switzerland and Germany, with 11.3% and 14.1%, respectively, of the population being over the age of 85 years (United Nations, 2012). This will total more than 10 million individuals. The incidence of fractures is high in older populations (Piirtola et al., 2008), largely because of age-related diseases such as osteoporosis. In their lifetime, approximately 30%–50% of women and 15%–30% of men will suffer a fracture related to osteoporosis (Randell et al., 1995). It is accepted that the mandible and maxilla exhibit age-related changes, although the influence of osteoporosis is still unclear (Kloss and Gassner, 2006). Furthermore, an increased fracture hazard is present due to sclerosis or osteoporosis of jawbones. Oral and maxillofacial surgery of elderly patients must consider age-related physiological changes of both inner organs and oral structures (Hausamen and Schliephake, 1990).

There are few published articles addressing the impact of ageing on maxillofacial trauma in elderly patients (Goldschmidt et al., 1995; Gerbino et al., 1999; Gray et al., 2002; Kloss and Gassner, 2006; Kloss et al., 2007; Arangio et al., 2012; Velayutham et al., 2013). In our literature search, no primary research article was found that included a statistically sufficient number of patients over the age of 80 years. Therefore, it was the aim of this retrospective study to assess the causes, distribution, co-morbidities and complications of treatment for maxillofacial trauma and fractures in this elderly population. Another aim was to show that satisfactory management and preventive strategies can be achieved, thereby significantly improving the quality of life of the elderly population (Hausamen and Schliephake, 1990) affected by maxillofacial trauma.

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2. Material and methods

We retrospectively analysed data for all patients over the age of 80 years requiring treatment for cranio-maxillofacial trauma injuries at the Department of Cranio-maxillofacial and Oral Surgery at the Medical University Hospital of Basel from period 1999 to 2009. Relevant information and data were obtained from clinical records, files and radiological images. This information included sex, age, survival time, diagnosis, localization, surgical intervention (e.g. operating time, surgical access, etc.), aetiology, concomitant injuries (e.g. fractures at different sites, laceration wounds), co-morbidities (e.g. hypertonia, diabetes mellitus, carcinoma, etc.) and complications (e.g. retrobulbar haematoma, ectropion, infections, etc.) during the follow-up period and survival time after trauma.

The minimum age of 80 years and above was based on the UN World Population Prospects in which one of the possible "selection variables" is: population 80 plus (United Nations, 2012).

Statistical analysis was performed using Excel (Windows Microsoft 2007) and SPSS (Version 11.0, SPSS Inc.). The study was conducted according to the tenets of the Declaration of Helsinki and was approved by the local ethics committee.

3. Results

94 patients with 96 separate incidences of trauma were analysed. Of these, 68% were females and 32% were males. Patient age ranged from 80.25 to 94.67 years, with an average age of 85.21 years. The annual distribution showed an increased number of patients suffering from oral and maxillofacial trauma during the period of 2005–2009 (Fig. 1). The monthly distribution showed a small peak of cases during the summer (Fig. 2).

More than 90% of the patients reported for treatment within 48 h of their accident, with 75% of these being treated on the same day. The average follow-up time was determined from 90 patients. Fifty-six patients (48.3%) were still alive at the time of data acquisition. The average follow-up time was 2.41 years, with a minimum of 0.08 years and a maximum of 10.67 years. The follow-up time dictated by death of the patient was 0.23 years on an average, with a minimum of 0.003 years (one day) and a maximum of 7.42 years.

Of the 96 fractures, 86 resulted from falls, 9 from traffic accidents and 1 from interpersonal violence. The falls could be categorised as simple falls or stumbling/tripping ($n = 65$), falling out of bed ($n = 4$), falling out of a wheelchair ($n = 2$), falling with a 4-wheeled rollator (rolling walker) ($n = 1$), observed syncopy ($n = 3$), observed epileptic falls ($n = 2$) and getting into or out of a bus/tram/car ($n = 10$). Traffic accidents were categorised as being hit by a tram ($n = 3$), being a front passenger ($n = 2$) in a car, being a driver of a car ($n = 1$), being hit by a car ($n = 1$), being a motorcyclist ($n = 1$) and being hit by a motorcycle ($n = 1$).

The fractures were categorised as fractures of the midface ($n = 72$), mandible ($n = 10$), midface and mandible ($n = 9$) and midface and neurocranium ($n = 5$). Fractures in the midface included injuries to the zygoma ($n = 45$), orbital blow-out ($n = 18$), nasal bone ($n = 22$), Le Fort I ($n = 10$), Le Fort II ($n = 5$) and Le Fort III ($n = 3$) (more than one choice possible). Mandibular fractures included those to the condylar neck ($n = 10$), condyle ($n = 3$), body ($n = 4$) and parasymphysis ($n = 2$). In the mandible, fracture lines were identified as single ($n = 8$), double ($n = 3$), triple ($n = 3$) and more than three ($n = 1$) (more than one choice possible).

Dental trauma was recognised in three cases. The first case showed a subluxation of three teeth in the lower jaw, the second case a subluxation of two teeth and one coronal fracture in the upper jaw and the third case had tooth fracture in both jaws. Facial laceration also occurred in 59 cases. In 29 cases, concomitant fractures occurred, the distribution of which is illustrated in Fig. 3.

Further concomitant injuries were cerebral contusions in 26 cases and intracranial bleeding in eight cases.

Fifty-five patients received surgical intervention in the cranio-maxillofacial area. Overall, more female patients ($n = 37$) underwent surgery, but intra-gender distribution was almost equal (Fig. 4).

The surgical approach to the treatment of orbital fractures was a mid-eyelid incision ($n = 25$), except in one case, where a trans-conjunctival approach was used. The average operating time for surgical interventions under general anaesthesia was 105 min, with a minimum time of 11 min and a maximum of 360 min. In some cases ($n = 14$), another, independent, surgical procedure was required, either on the same day or on a different day. This operating time was not included in the numbers mentioned above.

Concomitant diseases – generally common in the elderly population – were also found in this study. As far as they were reported, the following organs were affected or the following diseases were found: hypertension ($n = 45$), heart problems ($n = 45$), arthritis

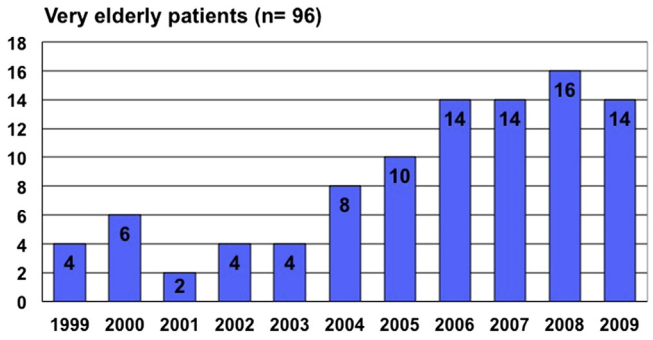

Fig. 1. Number of patients older than 80 years per year, 1999–2009.

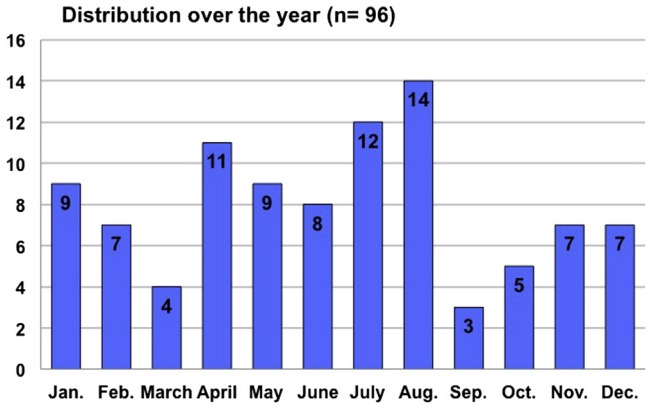

Fig. 2. Monthly distribution of cases.

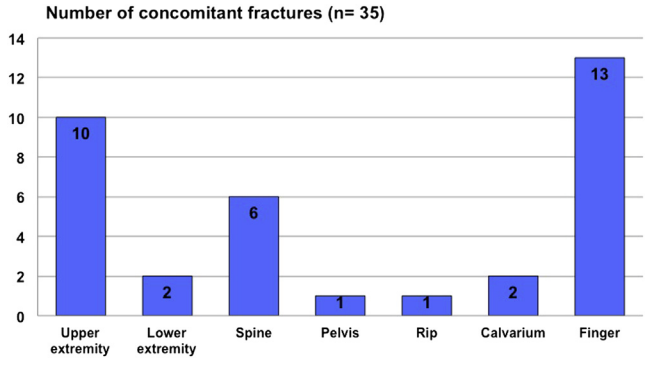

Fig. 3. Distribution of concomitant fractures.

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