

Prevalence of oral pathology in elderly people from the Forensic Medicine Service in Mexico City

Original Article

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SUMMARY

Introduction. Oral pathologies are frequent in the elderly population, but the studies carried out so far come from populations other than Mexican; it is important to know the prevalence of oral pathologies in our population.

Material and Methods: We included 150 cadavers of individuals from 60 to 92 years old, 39% female, all of them admitted to the Forensic Medical Service of the Institute of Forensic Sciences of Mexico City. A qualitative analysis of soft tissue and hard tissue pathologies was performed, using odontometric indexes and histopathological study in cases of doubt. Statistical analysis of descriptive type was carried out.

Results: Of the population studied, the highest prevalence was found in

alterations of the temporomandibular joint (26.14%) followed by frictional keratosis (10.68%), dentigerous cyst (10%), actinic cheilitis (8.64%) and nicotinic leukokeratosis (8.41%); We did not find differences by sex, subgroups of age and other sociodemographic factors.

Conclusion: The prevalence of oral pathologies in our population is different from that reported in the international literature. It could be related to socioeconomic status, access to health services and hygiene conditions, although the design of our study can not determine this facts. Our results allow the design of preventive campaigns to reduce the associated morbidity and mortality.

Keywords: Oral pathology, third age.

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INTRODUCTION

Aging is a natural, dynamic, irreversible and progressive process that starts from birth. However, after 60 years of age, the category of Older Adult is acquired, according to the World Health Organization (Cawson, 2009). The number of older adults is growing steadily in the world; in the 1950s there were 400 million, rising to 700 million just 50 years later (Cuenca, 2013). In Mexico it is expected that the proportion of older adults will go from 4.6% in 2000 to 22.6% in a projection to the year 2050. The increase in the survival of older adults has led to an increase in the proportion of deaths in this group of age in relation to the general population; in 2011, the proportion of deaths in this age group was 61.4% (De Rossi, 2007), most of them related to chronic degenerative diseases, such as diabetes mellitus, cerebrovascular diseases and ischemic heart disease (Higashida, 2009).

The study of aging of the oral cavity has been based on the general belief that there is a progressive deterioration of oral physiology over time (Natto, 2014). This erroneous concept has been based on comparative studies between elderly people and healthy young people, concluding that many structures were altered as a result of aging (Sáez, 2007). Oral diseases are one of the most prevalent pathologies in the elderly, frequently associated with malnutrition, cancer, xerostomia, pneumonia, emphysema, cardiac pathologies and diabetes (Aida, 2011, Mariela, 2006). Oral pathologies can be related to two conditions: expression of aging itself and accumulation of internal physiological and pathological factors (Anavi, 2011).

There are several modifications of the oral cavity which are product of aging; therefore, they can not be considered oral pathology. These include: atrophy of the oral mucosa, decreased salivary secretion, changes in dental morphology, ankylosis of the periodontal ligament, degenerative changes of the temporomandibular joint, as well as mandibular retraction and prognathism (D'Hyver, 2011).

Oral diseases present risk factors related to poor health, smoking and the harmful consumption of alcohol, factors they share with the four most prevalent chronic diseases in the world: cardiovascular diseases, cancer, chronic respiratory diseases and diabetes (Neville, 2009; Kenneth, 2011). It should be noted in this regard that oral conditions are often associated with chronic diseases. The prevalence of these diseases varies depending on the geographic region in question and the availability of oral health services (Ingle, 2007).

Entities presenting in soft tissues or hard tissues of the oral cavity have been described (Heitmann, 2008). Soft tissues pathologies may include lesions of the oral mucosa (irritations and repeated ulcerations), tongue (fissures, depopilation), salivary glands (xerostomia), the muscular system (atrophy, hypotonia) and nervous system (glossodynia, hyperesthesia, dysgenesis, neuromuscular incoordination). Hard tissues pathologies may include lesions of the dental organs (attrition, erosion, abrasion, discoloration, decay), bone tissue (resorption, osteoporosis) and the temporomandibular joint (arthritis, subluxation, dislocation).

In our environment, the prevalence of oral pathologies in the elderly has not been studied. It has been estimated that

around 17% of the elderly in Mexico have some type of oral pathology, related to smoking, loss of teeth, the use of dental prostheses and deficiency in the oral hygiene (Mexican Ministry of Health, 2001). It is important, therefore, to determine the prevalence of oral pathologies in our population, in order to identify the most frequent entities and the risk factors that could be related to them (Galván, 2007, Eversole, 2006). This type of studies allows a descriptive statistical analysis of the behavior of oral pathologies in elderly people in Mexico and the design of prevention and intervention strategies to reduce the prevalence of entities that could be reflected in increased rates of morbidity and mortality of individuals of the third age (Espeso, 2006).

METHODS

The study population consisted of 150 individuals with an age range of 60 to 100 years, who met the inclusion criteria and who were in the status of unknown or unidentified at the time of the dental study. 40% of the individuals included lived in the streets and their causes of death were transit accidents or chronic degenerative diseases, such as chronic obstructive pulmonary disease, liver cirrhosis, kidney failure and various neoplasms. 23% of the deceased corresponded to individuals who lived in a family nucleus and its causes of death were accidental (inhalation of carbon monoxide, inhalation of LP gas), transit events, work accidents and chronic degenerative diseases. 20% of the individuals were abandoned in public hospitals and their causes of death were similar to the mentioned groups. The rest of the sample consisted of individuals who died from firearm projectile injuries (12%) and individuals who died in shelters and houses of assistance in Mexico City (5%).

The study was conducted in the amphitheater of the Institute of Forensic Sciences of Mexico City and the the Superior Court of Justice; a dental clinical study of the oral cavity and the perioral region was carried out, with the necessary means to study the variables included and related to the objectives of the study. Oral mirror, healing clamp and dentine excavator were used; dental indices were used for the study of white tissues, cheeks, gingiva, tongue floor, ventral and lateral walls of the tongue, soft palate, lymph nodes, ganglionic chain, main and accessory salivary glands as well as hard tissues (dental organs, upper maxilla, mandible, maxillary sinus and temporomandibular joint). In addition to the clinical examination, histopathological sample was taken in cases of diagnostic doubt; data obtained was collected in a database for further statistical analysis.

Inclusion criteria were: male or female sex; age between 60 and 100 years old; death due to degenerative diseases, accidents, violent acts, abandonment; admission to the forensic medical service of Mexico City during the period between November 2014 and June 2015. We excluded individuals who did not present the complete oral cavity or who presented any circumstance that prevented its examination. We analyzed age, sex, presence of restorative works and dental prostheses as well as Oral Pathology (measured by the CPO index of Klein and Palmer, IHOS index of simplified oral hygiene, Gingival Index and the O'Leary Index. Statistical analysis was descriptive for qualitative and quantitative variables, for determining prevalence and related factors.

RESULTS

We included 150 individuals over the age of 60 who entered the Forensic Medical Service of Mexico City, of which

39% (n = 59) corresponded to the female sex. The general prevalence of oral pathologies in the population is illustrated in Table 1.

EDAD	SEXO	PATOLOGÍA	PORCENTAJE
60 – 94 AÑOS DE EDAD	FEMENINO Y MASCULINO	1. TRASTORNOS DE ATM	26.14%
		2. ULCERA INESPECÍFICA	8.86%
		3. FIBROMA TRAUMÁTICO	3.18%
		4. QUERATOSIS FRICCIONAL	10.68%
		5. LEUCOPLASIA	7.27%
		6. ADENOMA PLEOMORFO	2.50%
		7. CARCINOMA ESCAMO CELULAR	0.91%
		8. ESTOMATITIS NECROSANTE	5.00%
		9. SÍNDROME DE SJÖGREN	1.14%
		10. QUEILITIS DESCAMATIVA	1.59%
		11. ADENOMA PLEOMORFO MALIGNO	0.68%
		12. QUISTE DENTIGERO	10.00%
		13. LEUCOQUERATOSIS NICOTÍNICA	8.41%
		14. QUISTE LINFOEPITELIAL PAROTÍDEO	0.68%
		15. HERPES ORAL	3.18%
		16. SARCOMA DE KAPOSÍ	1.14%
		17. QUEILITIS ACTÍNICA	8.64%

Table 1. General Prevalence of oral pathologies in the population studied (n=150)

As can be seen, temporomandibular joint disorders are the most frequent, followed by frictional keratosis and dentigerous cyst, nonspecific ulcers, actinic cheilitis and nicotinic leukokeratos.

When performing a prevalence analysis by sex, we observed the

differences concentrated in Table 2, which corresponds to the female sex and Table 3, which corresponds to the male sex. To determine differences in relation to age, the sample was divided into two groups. Group A constituted by individuals from 60 to 70 years old and group B comprised by individuals from 71 to 92 years old.

PATOLOGIA	General masculino y femenino	General femenino	Total femenino A	Total femenino B
1. TRASTORNOS DE ARTICULACIÓN TEMPOROMANDIBULAR	26.14%	26.67%	23.47 %	31.34%
2. ULCERA INESPECIFICA	8.86%	9.09%	9.18%	8.96%
3. FIBROMA TRAUMÁTICO	3.18%	4.24%	4.14%	0.00%
4. QUERATOSIS FRICCIONAL	10.68%	12.12%	2.24%	11.94%
5. LEUCOPLASIA	7.27%	6.06%	4.08%	8.96%
6. ADENOMA PLEOMORFO	2.50%	1.21%	1.02%	1.49%
7. CARCINOMA ESCAMO CELULAR	0.91%	1.21%	2.04%	0.00%
8. ESTOMATITIS NECROSANTE	5.00%	3.64%	5.10%	1.49%
9. SÍNDROME DE SJÖGREN	1.14%	0.61%	0.00%	1.49%
10. QUEILITIS DESCAMATIVA	1.59%	1.82%	2.04%	1.49%
11. ADENOMA PLEOMORFO MALIGNO	0.68%	0.00	0.0%	0.00%
12. QUISTE DENTIGERO	10.00%	12.12%	14.29%	8.96%
13. LEUCOQUERATOSIS NICOTÍNICA	8.41%	6.67%	4.08%	10.45%
14. QUISTE LINFOEPITELIAL PAROTÍDEO	0.68%	0.61%	0.00%	1.49%
15. HERPES ORAL	3.18%	4.85%	4.08%	5.97%
16. SARCOMA DE KAPOSI	1.14%	1.21%	2.04%	0.00%
17. QUEILITIS ACTÍNICA	8.64%	7.88%	9.18%	5.97%

Table 2. Comparative analysis of oral pathologies by group of age in female individuals

PATOLOGIA	General masculino y femenino	Masculino general	Masculino A	Masculino B
1. TRASTORNOS DE ARTICULACIÓN TEMPOROMANDIBULAR	26.14%	25.82%	25.66%	26.02%
2. ULCERA INESPECIFICA	8.86%	8.73%	9.21%	8.13%
3. FIBROMA TRAUMÁTICO	3.18%	2.55%	4.61%	0.00%
4. QUERATOSIS FRICCIONAL	10.68%	9.82%	8.55%	11.38%
5. LEUCOPLASIA	7.27%	8.00%	5.26%	11.38%
6. ADENOMA PLEOMORFO	2.50%	3.27%	3.29%	3.25%
7. CARCINOMA ESCAMO CELULAR	0.91%	0.73%	0.66%	0.81%
8. ESTOMATITIS NECROSANTE	5.00%	5.82%	7.24%	4.07%
9. SÍNDROME DE SJÖGREN	1.14%	1.45%	1.97%	0.81%
10. QUEILITIS DESCAMATIVA	1.59%	1.45%	1.32%	1.63%
11. ADENOMA PLEOMORFO MALIGNO	0.68%	1.09%	1.97%	0.00%
12. QUISTE DENTIGERO	10.00%	8.73%	9.21%	8.13%
13. LEUCOQUERATOSIS NICOTÍNICA	8.41%	9.45%	9.21%	9.76%
14. QUISTE LINFOEPITELIAL PAROTÍDEO	0.68%	0.73%	0.66%	0.81%
15. HERPES ORAL	3.18%	2.18%	1.97%	2.44%
16. SARCOMA DE KAPOSI	1.14%	1.09%	1.97%	0.00%
17. QUEILITIS ACTÍNICA	8.64%	9.09%	7.24%	11.38%

Table 3. Comparative analysis of oral pathologies by group of age in male individuals

In the case of the female sex, the temporomandibular joint pathologies are the most frequent, especially in women over 71 years of age, followed by frictional keratosis, dentigerous cyst and nicotinic

leukokeratosis. In the case of the male sex, a similar pattern is observed.

DISCUSSION

Studies of the prevalence of oral pathology have been limited to certain age groups and, as far as we know, no studies have been carried out on corpses of elderly individuals in our environment. In the present study we included individuals from 60 to 100 years of age who entered the Forensic Medical Service of the Institute of Forensic Sciences of Mexico City.

Some studies have analyzed the mortality rate associated with oral pathologies. Heitman et al established that the loss of dental organs implied a high risk of cardiovascular diseases (Heitmann, 2008). Hamalainen et al (2003) established that the risk of death associated with dental loss was 1,026 ($p < 0.05$), which could be a predictor of mortality, especially if it is related to socioeconomic status (Ansai, 2010). On the other hand, poor oral hygiene has been related to death due to aspiration pneumonia in nursing homes (Sjogren, 2008), and the risk can be reduced by improving hygiene habits. In some cases, oral pathologies can hinder the feeding of the individual, leading to malnutrition and increased risk of morbidity and mortality, especially in vesicular and inflammatory diseases such as lichen planus and nonspecific oral ulcers.

The first epidemiological studies of oral pathology were performed by Axell et al (1976), in the Swedish population, finding around 60 different oral pathologies, of which the most frequent were multifocal epithelial hyperplasia, leuoedema, geographic tongue and lichen planus. Marija et al (2000) conducted an epidemiological study in the Slovenian population, finding high prevalence of

Fordyce granules, fissured tongue, lingual varices, cold sores, recurrent aphthae, subprosthetic stomatitis and leukoplakia. In the Italian population, Campisi et al (2001) observed that 81.3% had at least one oral pathology, especially hairy tongue, leukoplakia, actinic cheilitis and traumatic ulcers. In Spain it was observed that pigmented lesions were the most frequent followed by frictional keratosis (López, 2010). In the United States, Shulman et al (2004) reported a high prevalence of Candida lesions, amalgam tattoos and frictional keratosis. In a study conducted in Cuba, a high prevalence of leukoplakia, fibrous hyperplasia, traumatic fibroma and pyogenic granuloma was found (Mariela, 2006).

In Mexico, two studies have been conducted on the prevalence of oral pathology in elderly individuals (Sánchez, 2007). Ramírez et al (2000) observed a high prevalence of pemphigus vulgaris, lichen planus, candidiasis, recurrent aphthous stomatitis, herpes simplex and traumatic lesions. Castellanos et al (2008) performed a retrospective analysis of the dental histories performed in the previous 15 years, finding a high prevalence of leukoedema, traumatic ulcer, frictional keratosis, traumatic erythema and chronic atrophic candidiasis.

The results obtained in the present study show some differences with that reported in the world literature, with a high prevalence of temporomandibular joint alterations, followed by frictional keratosis, dentigerous cyst and nicotinic leukokeratosis, both in men and women. . This may be related to the sociodemographic factors of our sample as well as the size of the population studied. In our study there is a tendency to reactive and infectious lesions, which can be

related to the lack of attention of the soft tissues of the oral cavity.

The results obtained in this work provide a general overview of the oral health of the elderly; there are no current figures on the oral health of the elderly person who enters a Forensic Medical Service. This type of population is considered as frequently toothless, but also in some cases with presence of periodontal caries and disease, but excluding these variables in this study we observed and reported a total of 17 oral pathologies in the cadavers of older adults who entered the Institute of Forensic Sciences of Mexico City. A very important point in this study are the high numbers of Temporomandibular Joint Disorders; this may be due to the fact that the older adult is subjected to a very high stress load, bad hygiene habits or environmental conditions.

The performance of basic epidemiological studies is very important to know the prevalence of various entities, including oral pathologies in elderly people. This allows to determine the possible risk factors related, such as physical, economic and labor abandonment, as well as the design and implementation of preventive campaigns that decrease the morbidity and mortality rate; it can also reduce the economic costs that usually obstaculizes the adequate attention of vulnerable individuals.

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