

# Malignant salivary gland tumors

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## RESUMEN

El objetivo de este trabajo fue conocer la frecuencia relativa de los tumores malignos de glándulas salivales en una población mexicana y compararla con datos previamente publicados de poblaciones latinoamericanas y no latinoamericanas. Se revisaron los archivos del Servicio de Diagnóstico en Patología Bucal y Maxilo-Facial de la Facultad de Odontología, UNAM de 1962 a 1997. Durante ese lapso se procesaron 9,639 biopsias de las cuales el 6.1% fueron lesiones o tumores de glándulas salivales, de éstas, 75 casos fueron neoplasias y de ellas, 26 casos correspondieron a carcinomas. De los 26 casos, el 50% fueron carcinomas mucoepidermoides, el 31% carcinomas adenoideos quísticos, 7.7% fueron adenocarcinomas NOS y 11.3% de otros carcinomas. Estos carcinomas fueron más frecuentes entre la 5<sup>a</sup> y 7<sup>a</sup> décadas de la vida y aparecieron con mayor frecuencia en el paladar, seguido por el área retromolar y el piso de la boca. El promedio de edad fue de 44.3 años y no se observó diferencia significativa por sexo (relación hombre:mujer de 1.1:1). Se observaron algunas diferencias con reportes previos. Nuestros resultados junto con otros de países latinoamericanos, sugieren que las diferencias con poblaciones no Latinoamericanas se deben a factores genéticos o étnicos.

**Palabras clave:** Glándulas salivales, tumores de glándulas salivales, carcinoma mucoepidermoide, carcinoma adenoideo quístico, carcinoma.

## INTRODUCTION

Salivary gland neoplasms are a heterogeneous and important group of tumors of the Oral and Maxillofacial Pathology. They comprise from 2 to 3% of all the salivary gland lesions and tumors<sup>1,2</sup> because their heterogeneity, since several years, different classifications based in clinical or microscopic criteria had been appeared.<sup>3-7</sup> The most recent and most widely used is that proposed by Seifert et al.,<sup>8</sup> that has been adopted by the World Health Organization.<sup>9</sup>

In 1960, Chaudhry<sup>10</sup> informed of 1414 cases of salivary gland neoplasms from people living in Minneapolis, 51 cases (3.6%) were carcinomas. Later, Eneroth<sup>11</sup> published an study reporting on the location,

## ABSTRACT

*The aim of this study was to know the relative frequency of the malignant salivary gland tumors in a Mexican population and compare it with previously published data from Latin American and non-Latin American countries. The files of the Oral and Maxillofacial Pathology Diagnosis Service of the Faculty of Dentistry, UNAM from 1962 to 1997 were reviewed. We found that 9,639 oral and maxillofacial biopsies were processed, of them, 6.1% were salivary gland lesions or tumors and 75 were neoplasms. Twenty-six cases were diagnosed as salivary gland carcinomas, 50% were mucoepidermoid carcinomas, 31% adenoid cystic carcinomas, 7.7% adenocarcinomas NOS and 11.3% were other carcinomas. They were located more frequently in palate followed by retromolar area and floor of the mouth. Mean age was 44.3 years and statistically significant difference was found for gender (M:F ratio was 1.1:1). Few differences were found with previous reports. Our results and those from Latin American countries suggest that differences found in non-Latin American populations are related to genetic or ethnic factors.*

**Key words:** Salivary glands, salivary gland tumors, mucoepidermoid carcinoma, adenoid cystic carcinoma, carcinoma.

80% of these neoplasms were located in parotid gland, 5 to 10% in submandibular gland, 1% in sublingual and 10 to 15% in minor salivary glands.

In a report on salivary gland tumors in Uganda, Davies et al.<sup>12</sup> found that carcinoma cases comprised 14.7% of their sample. In another study, Thomas<sup>13</sup> reported 190 salivary gland neoplasms, of them, 16% were carcinomas. Eveson<sup>1</sup> made a study of salivary and oropharyngeal glands, 46% were malignant tumors. In this study adenoid cystic carcinoma was the most common tumor and it was observed more frequently in palate (54%).

Chau reported 98 cases of salivary gland tumors and informed that 19 (19%) were mucoepidermoid carcinomas, 12 (12%) adenoid cystic carcinomas and 4 (4%) were adenocarcinomas NOS.<sup>14</sup> Waldron described 426 cases intraoral salivary gland tumors, of them, 42.5% were malignant and showed that the most common carcinoma was the mucoepidermoid

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carcinoma.<sup>15</sup> Fonseca et al.<sup>16</sup> published a 24 cases series found in adolescents and children, there were 7 cases of carcinomas. Van Heerden and Raubenheimer<sup>17</sup> described 70 cases of African salivary gland neoplasms, of them, 36 were classified as malignant (52%). In 1991, Spiro et al.<sup>18</sup> made another study on salivary gland tumors, they found that 82% of the patients had malignant tumors. Thereafter, Shingaki et al.<sup>19</sup> published the results of 44 Japanese patients with salivary gland carcinomas and Chu et al.<sup>20</sup> informed of 256 minor salivary gland carcinomas in Chinese population.

We reviewed the Latin American literature and found that in 1995, Loyola et al. published 164 cases of salivary gland neoplasms from Brazil, 38% were carcinomas.<sup>21</sup> In Venezuela, Rivera-Bastidas et al.<sup>22</sup> reviewed 9000 biopsies from a 24 year period. They found 62 salivary gland cases and informed that of them, 28 cases were carcinomas. Piloni and Keszler<sup>23</sup> made a retrospective study in an Argentine population from Buenos Aires and informed that 28 were carcinoma cases. Unfortunately, large studies on malignant salivary gland tumors in Mexican population were not made. Molina-Moguel et al. study<sup>24</sup> reported on 11 cases and some other as those of Ovalle-Castro et al.<sup>25</sup> with 2 cases and that from Barrera-Múzquis et al.<sup>26</sup> who reported two pediatric cases. Another three more reports from the files of the Mexican Instituto Nacional de Cancerología were found.<sup>27-29</sup>

As it is observed, frequency of these neoplasms is very different in each of the reviewed reports. This can be explained by the fact that data sources came from very different institutions and the inclusion criteria varied widely. They varied from minor salivary gland tumors, parotid tumors, submaxillary gland tumors, palatal tumors, oropharyngeal tumors. These features in each report made that the relative frequencies found in those studies were very different.

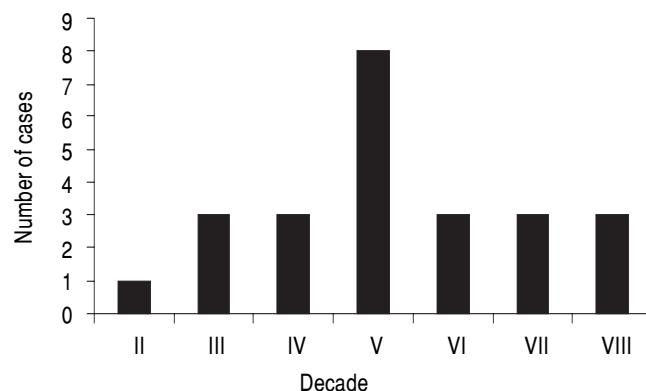
## MATERIAL AND METHODS

We reviewed the files of the Oral and Maxillofacial Diagnosis Service, Faculty of Dentistry, UNAM. The reviewed period was from 1962 to 1995, we separated all the cases diagnosed as salivary gland lesions or tumors and selected those cases diagnosed as salivary gland neoplasms. Then, salivary gland carcinomas were analyzed. We reviewed all the available slides, and in some cases new slides were prepared, diagnoses were made according to the new International Histological Classification of Salivary Gland Tumors of Seifert et al.<sup>8</sup>

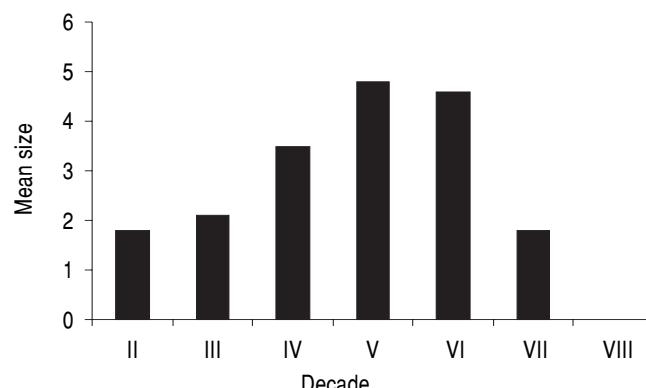
## RESULTS

In the reviewed period, our service processed 9,639 biopsies, of them, 591 cases (6%) were salivary gland tumors or lesions. Seventy-five cases (13%) were salivary gland neoplasms and 26 were diagnosed as salivary gland carcinomas (SGC). SGC represented 4.4% of all salivary gland biopsies and 35% of the salivary gland neoplasms. Of the reviewed cases, 50% were in males and 46% in females (one case has no gender recorded), age range was between 17 and 70 years with a mean age of 44 years. SGC showed a peak of incidence in the 5<sup>th</sup> decade of the life (Figure 1). As it is shown in figure 2, mean size of the tumors increased with the age of the patients.

For females age range was between 17 to 68 years with a mean age of 40 years, 60% of the tumors were found in the 4<sup>th</sup> and 5<sup>th</sup> decades (30% respectively). For males age range was between 22 to 70 years with a mean age of 48 years and were more frequently



**Figure 1.** Age frequency of salivary gland carcinomas in the studied sample.



**Figure 2.** Mean size of the tumors compared with patients age.

found in the 5<sup>th</sup> decade (50%). Male:Female ratio was 1.1:1.

Palate was the most common location for SGC (42%) followed by retromolar area (19%) and floor of the mouth (15.4%). Tumor size averaged 2.6 cm and varied from one to seven cm. It is important to note that the largest mean size was for tumors located in the floor of the mouth (3.8 cm), followed by retromolar SGT which their mean size was 2.7 cm.

Fifty percent of the SGC were mucoepidermoid carcinomas (MEC), of them, nine cases appeared in female patients (69.2%). Ten cases were classified as low grade tumors and three as intermediate grade tumors. Age range was between 27 and 60 years with a mean age of 37 years. Fifty-four percent of the MEC were located in the palate and they appeared most frequently in the 4<sup>th</sup> and 5<sup>th</sup> decades (46%). Mean size for MEC was of 3 cm. For males age range was between 22 to 46 years with a mean age of 42 years. For females age range was between 17 to 56 years and a mean age of 35 years was found.

Adenoid cystic carcinoma (ACC) was the second most common SGC we found in our study (31%). Males were slightly more frequently affected than females (57% vs 43% respectively). They were located more commonly in the floor of the mouth (37%), followed by palate (25%). Age range for adenoid cystic carcinoma affected patients was from 46 to 51 years with a mean age of 45 years and more frequently found in the 5<sup>th</sup> and 6<sup>th</sup> decades (83%). Mean size for these tumors was 2.4 cm. For males age range was between 27 to 51 years with a mean age of 43 years. For males it was between 47 and 50 years and a mean age of 48 years was found. Mean size for ACC tumors was 2.4 cm.

Adenocarcinomas NOS occupied the 3<sup>rd</sup> place in frequency of the SGT in our study (7.7%). They were two females and one male, mean age was 49 years with a range between 31 to 47 years. They had no preference for location and mean size was 2.2 cm. We found four other carcinomas. One was an acinic cell carcinoma in the cheek of a 70 year-old male patient. A poorly differentiated carcinoma of probably mioepithelial origin was found in the palate of a 46 year-old male. Another was a tubular basal cell adenocarcinoma located in the upper lip of a 68 year-old female patient. The last one was an undifferentiated carcinoma in the palate of a 66 year-old male.

## DISCUSSION

Salivary gland neoplasms represent less than 3% of all the head and neck tumors. In Latin America only few reported studies were found.<sup>21-26</sup> This situation makes

very difficult to compare the results of these studies since the majority of the non-Latin American studies were published before the edition of the International Histological Classification of Salivary Gland Tumors.<sup>8,9</sup>

Our results showed that SGC comprised the 4.4% of all salivary gland accessions and 35% of the salivary gland neoplasms. This figure is within the range of the previously published results in the English language literature, they varied from 20%<sup>2</sup> to 54%<sup>9</sup> and in the range of the Latin American results which varied from 27%<sup>24</sup> to 46%.<sup>22</sup> Latin American data compared with non-Latin American results showed similar figures on the relative frequency of different types of SGC.

Age range in our study was 17 to 70 years, data from English language literature showed a range from 3 to 85 years<sup>1</sup> and from 15 to 92 years.<sup>10</sup> Latin American range varied from 10 to 71 years.<sup>22</sup> Mean age in our study was 44 years. This figure is lower compared with previously reported figures from non-Latin American countries that varied from 50<sup>17</sup> to 59 years.<sup>10</sup> Latin American studies showed lower mean age for SGC patients. Our results showed that gender of the population studied presented no significant difference (50% males; 46% females). Latin American results indicate that our figure is very high since other reports showed that males were affected from 37%<sup>22</sup> to 44%.<sup>21</sup> We found that 5<sup>th</sup> and 6<sup>th</sup> decades were more commonly affected. These figures are very similar with previous Latin American and non-Latin American reports.<sup>1,10,14,15,21-26</sup> It was interesting to note that mean size of the tumors rose with the age of the patients (*Figure 2*). This is an unreported finding and needs the publication of other studies in order to confirm this figure.

As it was previously communicated in almost all the reviewed papers, palate was the most common affected site, followed by retromolar area and floor of the mouth.<sup>1-7,10,20-24</sup> It is important to point out that all the tumors located in the retromolar area were malignant (Ledesma and Garcés, manuscript in editorial review, 1999). According to our results, mean size for SGT in the present series was 2.6 cm, it suggests that oral SGT are early detected by Dentists. Our finding that tumors located in the floor of the mouth and retromolar area attained larger mean size compared with those from other locations, can be explained by the fact that they are areas difficult for examination and suggest that patients should seek for attention of a Specialist in Oral and Maxillofacial Pathology or Surgery in order to diagnose earlier tumors located in those places.

MEC was the most common SGT in our series, it represented 50% of all the SGT reported in this study. This figure agrees with previous papers.<sup>10,14,15,20-23</sup> Males were affected more frequently than females

(83% for males), it is a higher figure compared with previous reports. In this study mean age for MEC was 38 years, compared with previously published results<sup>1,20</sup> which showed older ages for patients, our results suggest that in the population studied, people is affected at early ages. Like other reports<sup>15,21,22</sup> palate, and retromolar area were the most frequent locations for this neoplasm.

In relation to other SGT, our sample is too small to permit valid comparisons.

It is necessary to point out that some differences between our results and other studies exist. These differences are related to data on age, gender and location. As well, these differences are not when our results are compared with those from Latin American countries. This finding strongly suggests that these differences are related with ethnic or genetic factors which have some influence the relative frequencies of the different SGT from Latin American and non-Latin American populations.

More studies with larger samples are needed in order to corroborate these findings.

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