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Original article

Incidence and management experience of oral cavity cancer at the *Instituto Nacional de Cancerología de México*

Incidencia y experiencia en el manejo del cáncer de cavidad oral en el Instituto Nacional de Cancerología de México

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ABSTRACT

Objective: The objective of this study is to present the incidence and management experience of oral cavity cancer (OCC) at the Instituto Nacional de Cancerología de México (INCan) during March 2018 and October 2020. **Study design:** It is descriptive, retrospective and cross-sectional. The database of 1,440 clinical records of the Head and Neck Surgery Department of the INCan was used, using the statistical software IBM® SPSS® Statistics, version 21 for Windows. Only 221 met the inclusion criteria, categorizing them according to age group, state of residence, predisposing factors, anatomical region, type of treatment, disease state, clinical stage (CS), and type of surgery performed with and without reconstruction. **Results:** The highest incidence of OCC occurred in the age group of 51 to 55 years (n = 31, 14.1%, SD = 1.47), in those who reside in the Estado de México (n = 66, 29.9%), the alcoholism and smoking were the main predisposing factors (n = 49, 22.1%), the most frequent anatomical region was the mobile tongue (n = 98, 44.1%), a high percentage

RESUMEN

Objetivo: *El objetivo de este estudio es presentar la experiencia de incidencia y manejo del cáncer de cavidad oral (CCO) en el Instituto Nacional de Cancerología de México (INCan) durante marzo de 2018 y octubre de 2020.* ***Diseño del estudio:*** *Es descriptivo, retrospectivo y transversal. Se utilizó la base de datos de 1,440 historias clínicas del Departamento de Cirugía de Cabeza y Cuello del INCan, utilizando el software estadístico IBM® SPSS® Statistics, versión 21 para Windows. Sólo 221 cumplieron los criterios de inclusión, clasificándolos según el grupo de edad, el estado de residencia, los factores predisponentes, la región anatómica, el tipo de tratamiento, el estado de la enfermedad, el estadio clínico (EC) y el tipo de cirugía realizada con y sin reconstrucción.* ***Resultados:*** *La mayor incidencia de CCO se presentó en el grupo de edad de 51 a 55 años (n = 31, 14.1%, DE = 1.47), en quienes residen en el Estado de México (n = 66, 29.9%), el alcoholismo y el tabaquismo fueron los principales factores predisponentes (n = 49, 22.1%), la re-*

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of patients abandoned treatment (n = 44, 19.9%), the main treatment was surgery (n = 41, 18.6%), there was a high percentage of patients alive during the analysis (n =189, 85.5%), the CS most incident was IV B (n = 80, 36.2%), hemiglossectomy was the main surgery performed (n = 31, 34.1%) and postoperative reconstruction was only performed in four patients (4.4%). **Conclusions:** The incidence of OCC in INCan is 15.3% and its management depends on the CS at the time of diagnosis.

Keywords: Incidence, management, cancer, oral cavity.

*gión anatómica más frecuente fue la lengua móvil (n = 98, 44.1%), un alto porcentaje de pacientes abandonó el tratamiento (n = 44, 19.9%), el tratamiento principal fue la cirugía (n = 41, 18.6%), hubo un alto porcentaje de pacientes vivos durante el análisis (n = 189, 85.5%), el EC más incidente fue el IV B (n = 80, 36.2%), la hemiglosectomía fue la principal cirugía realizada (n = 31, 34.1%) y la reconstrucción postoperatoria sólo se realizó en cuatro pacientes (4.4%). **Conclusiones:** La incidencia de CCO en el INCan es del 15.3% y su manejo depende del EC en el momento del diagnóstico.*

Palabras clave: *Incidencia, manejo, cáncer, cavidad oral.*

INTRODUCTION

Oral cavity cancer (OCC) represents a serious health problem, particularly in underdeveloped countries, with an estimated 484,628 cases in 2002[1] and a global gender ratio (men:women) of 2:1.[2]

There is great geographic variation in mortality from OCC. In 2000, mortality rates were excessively high in some countries in Central and Southern Asia and Melanesia, where rates were between 19 and 22 per 100,000 population.[1] In Africa, mortality rates have reached 14 per 100,000. In Europe, Slovakia and Hungary were the countries with the highest death rates (7 and 11 per 100,000). For 2020 in Latin America, mortality rates were high in Cuba, Brazil, and Uruguay, with mortality rates of 1.8, 1.5, and 1.4 per 100,000 population respectively, while the countries with the lowest mortality were Bolivia, Nicaragua, and Honduras, with mortality rates of 0.3, 0.33 and 0.38 per 100,000 population, respectively. In Mexico, the mortality rate for 2020 was 4.1 per 100,000 population.[1,3]

The campaign to fight cancer in Mexico originated in 1940 as an initiative promoted by the Ministry of Health and Assistance. The need to have an information system that would allow knowing the frequency and distribution of the different malignant neoplasms led to the creation, in 1982, of the National Cancer Registry (NCR) as a basis for evaluating the various health programs related to this disease and focused on the benefit of the population.[4]

In Mexico, for 1989, neoplasms of the oral cavity represented the 15th position for men and the 19th position for women with a ratio of 1.7 to 1; the average age of appearance corresponded to 60 years; the mobile tongue was the most frequent anatomical region (75%), followed by the base of the tongue (6%). The histopathological registry of malignant neoplasms (HRMN) also reported that during the 1993-1997 period, the oral cavity ranked 22nd with respect to the location of cancer in both sexes, corresponding to 1% of all registered cases. Like other reports, squamous cell carcinoma ranked first among the various histological types.[5]

There are few data on malignant lesions in the oral cavity in Mexico. During the year 2000, 1,389 cases of neoplasms located in the lip, oral cavity and oropharynx were reported, which represents 1.51% of the 91,913 cases of malignant neoplasms registered in that year.[5]

Malignant lesions located in the head and neck represent 17.6% of all (108,064) malignant neoplasms reported to the HRMN in 2002. Of these neoplasms, the most important group due to its frequency are non-melanocytic carcinomas of the skin, with 11,803 cases, which means 62% of the malignant tumors of this region in question. The next group is made up of malignant neoplasms of the upper aerodigestive tract, which represent 12% of malignant lesions in the head and neck, with 2,269 cases. Specific sites are distributed as follows: laryngeal cancer, 42%; oral cancer, 37%; nasal cavity and paranasal sinus cancer, 9%; oropharyngeal cancer, 6%; nasopharyngeal cancer, 3%, and hypopharyngeal cancer also with 3%. Likewise, the estimated lethality for OCC is 62.4%.[6]

Among the epidemiological factors for Latin America are considered age, sex, race, smoking and alcohol consumption, the latter being the most important risk factor for the development of this neoplasm, as well as recurrences after treatment. The human papilloma virus (HPV) in the Mexican population occupies a special place in the pathogenesis of oral squamous cell carcinoma, since the prevalence in men and women is 43 and 17.5%,

respectively, being the most frequently associated serotype 16.[7,8]

In relation to cancer of the upper aerodigestive tract, presentation in advanced stages is a constant. 65% of cases present in locally and regionally advanced stages. This is due to indolence on the part of the patients, but also to a lack of suspicion on the part of the first contact physician, so that the diagnosis is delayed, significantly deteriorating the prognosis. It is not uncommon for many patients to have been treated as infectious processes for months with no response and to have seen multiple dentists and physicians before the diagnosis is established.[9]

Histopathological prognostic factors include location, since tumors in the posterior region of the oral cavity are associated with a higher incidence of lymph node metastasis, tumor size, perineural lymphovascular invasion, bone involvement, sialoadenotropism (the latter associated with a higher risk of recurrences). Metastases of oral squamous cell carcinoma to the skin are also associated with low survival rates; the histological type, from well differentiated (grade I), moderately differentiated (grade II) to poorly differentiated (grade III), of which the latter has a worse prognosis; the presence of metastatic lymph nodes and desmoplasia, among others. Of these factors, the one with the greatest prognostic importance is tumor thickness; it was observed that patients with tumors > 5 mm have lower survival.[10]

The objective of this study was to identify the frequency and risk factors of OCC in a Mexican population, as well as to present the type of opportune treatment and multidisciplinary management that is given to this type of patients in the Instituto Nacional de Cancerología de Mexico (INCan).

MATERIAL AND METHODS

A retrospective and cross-sectional study of the new detected cases of OCC was carried out using the database of 1,440 clinical files of patients who attended the Head and Neck Surgery Department of the INCan during March 2018 and October 2020, of which 345 corresponded to patients diagnosed with oral cavity cancer, with only 221 meeting our inclusion criteria. 118 were excluded because they had incomplete files (they did not specify the anatomical region or the type of treatment offered) and six because it was corroborated after the biopsy that it was not a malignant neoplasm of the oral cavity. The statistical software IBM® SPSS® Statistics, version 21 for Windows, was used, as well as the statistical methods of: frequency distribution, arithmetic mean, standard deviation and 95% confidence intervals. They were categorized taking into account the following variables of interest: age group, state of residence, predisposing factors, anatomical region of the neoplasm, type of treatment, state of the disease during analysis, clinical stage (CS) according to the American Joint Committee on Cancer (AJCC) of 2017, and type of surgery performed with and without reconstruction.

The CS was categorized into groups as follows:

1. CS I: T1 + N0 + M0
2. CS II: T2 + N0 + M0
3. CS III: T1,2,3 + N1 + M0 or also T3 + N0 +M0
4. CS IVA: T1,2,3,4a + N2 + M0 or also T4a + N0,1 + M0
5. CS IVB: any T + N3 + M0 or also T4b + any N + M0
6. CS IVC: any T + any N + M1

Table 1: Frequency distribution of admissions per year of patients with oral cavity cancer in the INCan from March 2018 to October 2020.

Number of admissions per year	Men n (%)	Women n (%)	Subtotal	fi	hi	Fi	Hi
2018	52 (41.3)	32 (33.7)	84 (38.0)	84	0.380	84	0.380
2019	49 (38.9)	39 (41.1)	88 (39.8)	88	0.398	172	0.778
2020	25 (19.8)	24 (25.3)	49 (22.2)	49	0.222	221	1.000
Total	**126 (57.01)**	**95 (42.99)**	**221 (100.0)**	**221**	**1**		

fi = absolute frequency, hi = relative frequency, Fi = cumulative absolute frequency, Hi = cumulative relative frequency.
Source: Database of the Department of Head and Neck Surgery of the INCan. Confidence level of 95% ($p < 0.05$).

Table 2: Distribution of frequencies, arithmetic mean, standard deviation and confidence intervals of the age groups of patients with oral cavity cancer in the INCan.

Age group (years)	Men n (%)	Women n (%)	Subtotal n (%)	fi	hi	Fi	Hi	X	SD	CI (95%)
21-25	3 (2.4)	3 (3.2)	6 (2.7)	6	0.027	6	0.027	22.8	1.83	0.027 ± 0.021
26-30	7 (5.6)	4 (4.2)	11 (5.0)	11	0.050	17	0.077	28.1	1.53	0.050 ± 0.030
31-35	6 (4.8)	0 (0.0)	6 (2.7)	6	0.027	23	0.104	33.6	1.63	0.027 ± 0.021
36-40	4 (3.2)	1 (1.1)	5 (2.3)	5	0.023	28	0.127	38.6	0.54	0.023 ± 0.019
41-45	10 (7.9)	4 (4.2)	14 (6.3)	14	0.063	42	0.190	43.1	1.46	0.063 ± 0.032
46-50	12 (9.5)	9 (9.5)	21 (9.5)	21	0.095	63	0.285	47.6	1.32	0.095 ± 0.038
51-55	19 (15.1)	12 (12.6)	31 (14.1)	31	0.141	94	0.426	53.5	1.47	0.014 ± 0.015
56-60	13 (10.3)	14 (14.7)	27 (12.2)	27	0.122	121	0.548	57.6	1.36	0.012 ± 0.014
61-65	16 (12.7)	9 (9.5)	25 (11.3)	25	0.113	146	0.661	63.1	1.46	0.011 ± 0.013
66-70	9 (7.1)	14 (14.7)	23 (10.4)	23	0.104	169	0.765	68.2	1.27	0.010 ± 0.013
71-75	10 (7.9)	11 (11.6)	21 (9.5)	21	0.095	190	0.860	72.9	1.39	0.095 ± 0.038
76-80	11 (8.7)	5 (5.2)	16 (7.2)	16	0.072	206	0.932	78.4	1.59	0.072 ± 0.034
81-85	3 (2.4)	7 (7.3)	10 (4.5)	10	0.045	216	0.977	82.9	1.66	0.045 ± 0.027
86-90	2 (1.6)	1 (1.1)	3 (1.4)	3	0.014	219	0.991	87.7	1.15	0.014 ± 0.015
91-95	1 (0.8)	1 (1.1)	2 (0.9)	2	0.009	221	1.000	93	2.82	0.090 ± 0.037
Total	**126 (57.01)**	**95 (42.99)**	**221 (100.0)**	**221**	**1**					

Confidence level of 95% ($p < 0.05$).
fI = absolute frequency, hi = relative frequency, Fi = cumulative absolute frequency, Hi = cumulative relative frequency, X = arithmetic mean, SD = standard deviation, CI = 95% confidence interval.
Source: Database of the Department of Head and Neck Surgery of the INCan.

Taking into account that «T» represents the size of the primary tumor, «N» the metastasis in regional lymph nodes and «M» the distant metastasis.

The inclusion criteria were: all clinical files of patients diagnosed with oral cavity cancer without previous treatment registered in the database of the Head and Neck Surgery Department of the INCan from March 2018 to October 2020, clinical files of patients older than 18 years and of both sexes.

The exclusion criteria were the clinical files of patients that were incomplete and the elimination criteria were those clinical files where it was confirmed after the biopsy that it was not a malignant neoplasm of the oral cavity.

Within the types of treatment offered at INCan, we will mention their operational definitions:

1. Abandonment of treatment: those patients who stop attending the INCan at any stage of treatment after performing a biopsy to determine the diagnosis of the neoplasm.
2. Does not accept treatment: those patients who decide to drop out of any type of treatment at the INCan immediately have their oncological diagnosis corroborated through biopsy.
3. Surgery: patients who undergo surgical resection of a certain anatomical region of the oral cavity compromised by the malignant neoplasm.
4. Radiotherapy: uses high-energy particles or waves, such as X-rays, gamma rays, electron beams or protons, to kill or damage cancer cells.
5. Concomitant radiotherapy: it is administered at the same time as another treatment, such as chemotherapy, in order to carry out local and systemic treatment at the same time, thus improving the results of each therapy separately.
6. Chemotherapy: Treatment with drugs given orally or intravenously that stop the growth of cancer cells, either by killing the cells or by stopping them from dividing.
7. Pain clinic: is the service that is responsible for the evaluation and adequate management of pain caused by cancer in any of its phases and that is based on the application of the treatment algorithm proposed by the World Health Organization (WHO).
8. Palliative care: is the service that is responsible for providing care to patients with advanced and incurable oncological disease and their families, in

order to provide quality of life and quality of death until the last moment.

The Head and Neck Surgery Department of the INCan has a treatment protocol according to the CS in which the patients are at the time of diagnosis, which is as follows:

1. Early (CS I and II) squamous carcinomas of the upper aerodigestive tract (SC-UADT) are usually treated with a single therapeutic modality, either surgery (QX) or definitive radiotherapy (RT), although adjuvant treatment is added if necessary detect adverse prognostic factors.
2. In early clinical stages, although RT produces oncological results comparable to QX, immediate morbidity and sequelae generally advise QX, since this is an expeditious treatment that provides valuable prognostic information, therefore RT is usually reserved for the patient eligible or refusing to undergo surgery.
3. The treatment of choice for moderately advanced or advanced resectable (CS III and IVa) SC-UADT is surgical resection plus adjuvant treatment. Surgical resection is chosen if the resection sequelae are acceptable, otherwise, induction chemotherapy (QTi) is considered; but if at least a partial response is not obtained, the QX is resumed. But if a partial or complete clinical response is obtained, chemotherapy and concomitant radiotherapy (QT-RTc) are considered.
4. Patients with very advanced or unresectable (CS IVb) SC-UADT, if the patient is suitable, the treatment of choice is definitive QT-RTc, however, in some cases QTi is considered prior to QT-RTc if this implies some advantage, such as the possibility of resection or rapid palliation. After medical treatment, resection may be considered if the neoplasm has responded favorably and becomes resectable.
5. Both in early and advanced stages, the primary tumor and the regional nodes are treated in a coordinated manner seeking to match the best therapy for both the primary tumor and the regional nodes.
6. Finally, metastatic (CS IVc) SC-UADT, although they are considered incurable, and therefore the treatment has a palliative objective, a long-lasting palliation and good quality of life can still be obtained through the administration of a biological agent or immunotherapy, both with or without QTi.

Table 3: Frequency distribution of the states of residence of patients with oral cavity cancer (OCC) in the INCan.

State of residence	Total n (%)	fi	hi	Fi	Hi
Estado de México	66 (29.9)	66	0.299	66	0.299
Ciudad de México	58 (26.2)	58	0.262	124	0.561
Hidalgo	21 (9.5)	21	0.095	145	0.656
Morelos	16 (7.2)	16	0.072	161	0.728
Puebla	12 (5.4)	12	0.054	173	0.782
Guerrero	7 (3.2)	7	0.032	180	0.814
Michoacán	7 (3.2)	7	0.032	187	0.846
Veracruz	6 (2.7)	6	0.027	193	0.873
Tlaxcala	6 (2.7)	6	0.027	199	0.900
Oaxaca	5 (2.3)	5	0.023	204	0.923
Querétaro	5 (2.3)	5	0.023	209	0.946
Guanajuato	3 (1.4)	3	0.014	212	0.960
Zacatecas	2 (0.9)	2	0.009	214	0.969
Sonora	2 (0.9)	2	0.009	216	0.978
Chiapas	1 (0.5)	1	0.005	217	0.983
Sinaloa	1 (0.5)	1	0.005	218	0.988
Tabasco	1 (0.5)	1	0.005	219	0.993
Aguascalientes	1 (0.5)	1	0.005	220	0.998
Baja california	1 (0.5)	1	0.005	221	1.000
Total	**221 (100)**	**221**	**1**		

Confidence level of 95% ($p < 0.05$).
fI = absolute frequency, hi = relative frequency, Fi = cumulative absolute frequency, Hi = cumulative relative frequency.
Source: Database of the Department of Head and Neck Surgery of the INCan.

All the information provided in the database by the patients who attended in this period of time belongs to the Head and Neck Surgery Department of the INCan.

The data collection protocol and the permission to use the information collected that allowed this research to be carried out had the approval of the INCan Institutional Research Committee.

RESULTS

All results were obtained taking into account a confidence level of 95% ($p < 0.05$).

The number of admissions of patients with OCC to the INCan from March to December 2018 was 84 patients (38%), from January to December 2019 it was 88 patients (39.8%) and from January to October 2020 it was 49 patients (22.2%), decreasing notably

Table 4: Frequency distribution of predisposing factors in patients with oral cavity cancer in the INCan.

Predisposing factors	Men n (%)	Women n (%)	Subtotal n (%)	fi	hi	Fi	Hi
Smoking	4 (3.20)	13 (13.50)	17 (7.7)	17	0.077	17	0.077
Alcoholism	8 (6.30)	3 (3.10)	11 (5.0)	11	0.050	28	0.127
Cooking with firewood	4 (3.20)	34 (35.40)	38 (17.1)	38	0.171	66	0.298
Consumption of drugs	3 (2.40)	0 (0.00)	3 (1.4)	3	0.014	69	0.312
Cooking with firewood + smoking	1 (0.80)	1 (1.00)	2 (0.9)	2	0.009	71	0.321
Alcoholism + smoking	37 (29.40)	12 (12.50)	49 (22.1)	49	0.221	120	0.542
Cooking with firewood + alcoholism	6 (4.80)	9 (9.40)	15 (6.8)	15	0.068	135	0.610
Alcoholism + smoking + drugs	6 (4.80)	0 (0.00)	6 (2.7)	6	0.027	141	0.637
Alcoholism + drugs	1 (0.80)	0 (0.00)	1 (0.5)	1	0.005	142	0.642
Alcoholism + smoking + cooking with firewood	44 (34.90)	1 (1.00)	45 (20.3)	45	0.203	187	0.845
Alcoholism + smoking + cooking with firewood + drugs	3 (2.40)	0 (0.00)	3 (1.4)	3	0.014	190	0.859
None	9 (7.10)	22 (23.20)	31 (14.0)	31	0.140	221	1.000
Total	**126 (57.01)**	**95 (42.99)**	**221 (100.0)**	**221**	**1**		

Confidence level of 95% ($p < 0.05$). fi = absolute frequency, hi = relative frequency, Fi = cumulative absolute frequency, Hi = cumulative relative frequency. Source: Database of the Department of Head and Neck Surgery of the INCan.

from the previous year in relation to the lower number of hospital inflows due to the SARS-CoV-2 virus pandemic *(Table 1)*.

The highest incidence of OCC was in the age group 51 to 55 years (n = 31, 14.1%, SD = 1.47), followed by the age group 56 to 60 years (n = 27, 12.2%, SD = 1.36). OCC was more prevalent in men (n = 126, 57.01%) than in women (n = 95, 42.9%) with a male/female ratio of 1.32/1 *(Table 2)*.

The patients come from a total of 19 states of the Mexican Republic, where those who had a higher incidence of OCC (n = 66, 29.9%) were residents of the State of Mexico, followed by those who reside in Mexico City (n = 58, 26.2%) *(Table 3)*.

Alcohol consumption along with tobacco ranks first among the main predisposing factors for OCC (n = 49, 22.1%), with men being the most affected. The second predisposing factor with greater prevalence also in men was the consumption of tobacco, alcohol and cooking with firewood (n = 45, 20.3%). The third predisposing factor was cooking with firewood (n = 38, 17.1%), this time with a greater predominance in women. It can also be seen that tobacco consumption in women (n = 13, 13.5%) compared to men (n = 4, 3.2%) has been increasing in recent years *(Table 4)*.

The most frequent anatomical region of neoplasia was the mobile tongue (n = 98, 44.1%), affecting slightly more women than men, followed by the gingiva (n = 32, 14.4%) in second place and the hard palate (n = 22, 10%) in third place *(Figure 1)*.

There is a high percentage of patients who abandoned treatment (n = 44, 19.9%). The main treatment performed at the INCan to its patients was surgery (n = 41, 18.6%), followed by surgery together with radiotherapy (n = 35, 15.8%) in second place and only radiotherapy (n = 31, 14%) in third place *(Table 5)*.

There was a high percentage of patients alive during the analysis (n = 189, 85.5%) compared to the dead (n = 32, 14.5%) *(Table 6)*.

The most incident CS with which patients were diagnosed upon arrival at the INCan was IVB (n = 80, 36.2%), followed by stage III (n = 41, 18.6%) in second place and stage IVA (n = 38, 17.2%) in third place *(Table 7)*.

Hemiglossectomy was the most performed surgery (n = 31, 34.1%), followed by hemimaxillectomy (n = 16, 18.7%) in second place and hemimandibulectomy (n = 12, 13.2%) in third place. In addition, it is important to highlight that postsurgical reconstruction was only performed in four patients (4.4%), of which two were microvascular fibular grafts and two were rotational flaps *(Figure 2)*.

DISCUSSION

There are few data on malignant lesions in the oral cavity in Mexico. During the year 2000, 1,389

cases of neoplasms located in the lip, oral cavity and oropharynx were reported, which represents 1.51% of the 91,913 cases of malignant neoplasms registered in that year.[5] In our study we were able to determine that the admission of patients to the INCan was stable during 2018 and 2019, while during 2020 it decreased notably due to the high hospital occupancy due to the SARS-CoV-2 virus pandemic. Unlike some authors,[11,12] the majority of our patients They were referred by general practitioners.

In our study, the highest incidence of OCC was found in the age group of 51 to 55 years, these results being similar to those reported by Canto and Parkin[2,13] where more than 90% of malignant neoplasms in the oral cavity occur in people over 40 years of age and the average age at which this condition is diagnosed is around 63 years, with a high probability of death from the sixth decade of life.

It is recognized that OCC is more frequent in men, which has to do with a greater expression in these people of the main risk factors for the disease, in this case smoking and alcoholism, which are health problems, where men have not ceased to have the leading role.[14,15] This study shows that this frequency of the disease is still maintained in male patients who represented 57.01% of the total.

Carrillo et al.[16] in 2011, as well as Llewellyn et al.[17] in 2004 mention that smoking and alcoholism are determining factors for the development of OCC, which is consistent with what was found in our study where the consumption of both predisposes further to the appearance of the disease. Herity[18] reported an association between the amount of alcohol consumed and the risk of tongue cancer. Various theories of the mechanisms of this relationship invoke alcohol's dissolving effects on mucous membranes, negative effects on hepatic detoxification processes, and nutritional deficiencies common in alcoholics.[19]

Ramirez, Trinidade, Malone, Hendershot and Matovina[7,20-23] in their different studies mention that there is a high rate of abandonment of treatment in patients with OCC, which correlates with what was found in our study where the dropout represents a significant proportion of our cases.

Elango and Liang,[24,25] report that the tongue is the most frequently affected subsite. In our study, it was also determined that the mobile tongue was the main anatomical region of neoplasia with 44.3%.

In most developed countries, cancer mortality shows a reduction in the magnitude of its increasing trends; however, the profile of mortality from this type of cancer in less developed nations still shows a clear upward pattern.[26,27] Our study reported a mortality of 14.5% in 2020 of patients treated at the INCan.

It is important to note that in Mexico most patients are diagnosed with late CS (III and IV),[7,28] as shown

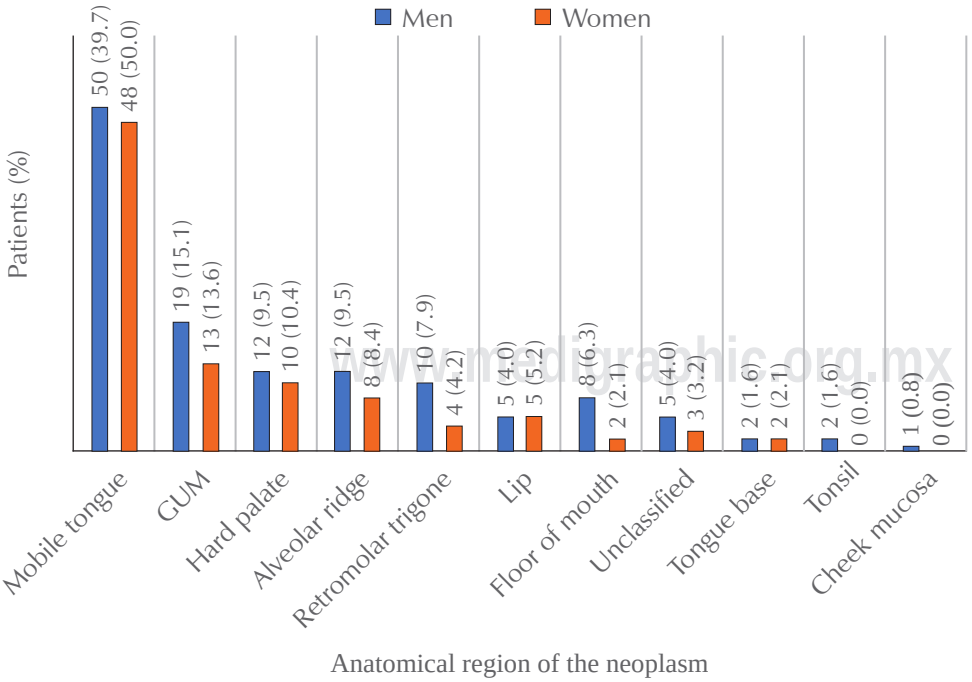

Figure 1:

Anatomical region of neoplasms in patients with oral cavity cancer (OCC) at INCan.

Source: Database of the Department of Head and Nek Surgery of the INCan. Confidence level of 95% ($p < 0.05$).

Table 5: Frequency distribution of the types of treatment for patients with oral cavity cancer performed at the INCan.

Treatment	Men n (%)	Women n (%)	Subtotal n (%)	fi	hi	Fi	Hi
Abandonment of treatment	27 (21.40)	17 (17.9)	44 (19.9)	44	0.199	44	0.199
Surgery	20 (15.90)	21 (22.1)	41 (18.6)	41	0.186	85	0.385
Surgery + radiotherapy	19 (15.10)	16 (16.8)	35 (15.8)	35	0.158	120	0.543
Radiotherapy	16 (12.70)	15 (15.8)	31 (14.0)	31	0.140	151	0.683
Chemotherapy + concomitant radiotherapy	13 (10.30)	6 (6.3)	19 (8.6)	19	0.086	170	0.769
Surgery + radiotherapy + chemotherapy	6 (4.80)	7 (7.4)	13 (5.9)	13	0.059	183	0.828
Palliative care	8 (6.30)	3 (3.2)	11 (5.0)	11	0.050	194	0.878
Pain clinic	7 (5.60)	4 (4.2)	1 (5.0)	11	0.050	205	0.928
Chemotherapy	5 (4.00)	3 (3.2)	8 (3.6)	8	0.036	213	0.964
Chemotherapy + radiotherapy	4 (3.20)	1 (1.1)	5 (2.3)	5	0.023	218	0.987
Does not accept treatment	0 (0.00)	2 (2.1)	2 (0.9)	2	0.009	220	0.995
Surgery + chemotherapy	1 (0.80)	0 (0.0)	1 (0.5)	1	0.005	221	1.000
Total	**126 (57.01)**	**95 (42.99)**	**221 (100)**	**221**	**1**		

Confidence level of 95% ($p < 0.05$). fi = absolute frequency, hi = relative frequency, Fi = cumulative absolute frequency, Hi = cumulative relative frequency. Source = Database of the Department of Head and Neck Surgery of the INCan.

Table 6: Frequency distribution of the disease state of patients with oral cavity cancer in the INCan at the time of analysis.

Disease state	Men n (%)	Women n (%)	Subtotal (%) n (%)	fi	hi	Fi	Hi
Alive	106 (84.1)	83 (87.4)	189 (85.5)	189	0.855	189	0.855
Dead	20 (15.9)	12 (12.6)	32 (14.5)	32	0.145	221	1.000
Total	**126 (57.01)**	**95 (42.99)**	**221 (100.0)**	**221**	**1**		

Confidence level of 95% ($p < 0.05$). fi = absolute frequency, hi = relative frequency, Fi = cumulative absolute frequency, Hi = cumulative relative frequency. Source: Database of the Department of Head and Neck Surgery of the INCan.

by our results, where the diagnosis of the disease was made in most cases in stage IVB.

The prognosis is better for patients with early lesions compared to those with advanced CS of the disease.[29] Treatment in late stages is complex, costly and with poor results;[30] when it is surgical it becomes mutilating and deleterious, producing in the patients with harmful physical, nutritional, social and psychological consequences, in addition to affecting their quality of life.[31,32] This is consistent with the main treatment performed at the INCan, which was surgery, the main ones being hemiglossectomy, hemimaxillectomy and hemimandibulectomy.

The Department of Oral Pathology of the Universidad Nacional Autónoma de México (UNAM) together with the INCan have been working on a National Registry of Oral Injuries (NROI) that by 2021 registers a total of 2090 oral cavity lesions detected, of which 137 were malignant in nature so they were referred to the INCan for specialized cancer treatment. In addition, this database places oral squamous cell carcinoma in 7th place, representing 2.3% of the total number of lesions detected to date.[33] This reveals the important work that UNAM has been carrying out to obtain a database of data of the cases detected in its Department of Oral Pathology and which in turn are sent in time for specialized treatment to the INCan.

Due to the fact that post-surgical reconstruction was performed in only four patients, it is important to place more emphasis on protocolizing the cases in a multidisciplinary manner with the

Departments of Plastic Surgery, Maxillofacial Prosthesis, Medical Oncology and Radiotherapy of our institute in order to restore the functionality and aesthetics lost by surgery and that allows them in the not too distant future to reintegrate them into society.

CONCLUSIONS

The incidence of OCC in the INCan during March 2018 and October 2020 is 15.3% (221 of 1,440 patients in total), being managed at the institute taking into account the CS at the time of diagnosis, as explained in the protocol of treatment of the Head and Neck Surgery Department for this type of patients.

Today, OCC continues to be a public health problem in Mexico, where the greatest predisposing factors for the disease are tobacco and alcohol consumption, so much more resources should be invested in prevention and not just in treatment, which in most cases, due to its detection in late CS, it becomes unsatisfactory for patients.

The importance of early diagnosis of the disease is essential, so health personnel (dentists and physicians with or without specialties) must have better training and awareness since their formation, in this way to prevent patients from going to highly specialized establishments seeking help to resolve their ailments in late CS, leading to a poor prognosis due to the few treatment options that can be offered.

Table 7: Frequency distribution of clinical stages according to the American Joint Committee on Cancer (AJCC-2017) of patients with oral cavity cancer in the INCan.

Clinical stage	Men n (%)	Women n (%)	Subtotal n (%)	fi	hi	Fi	Hi
I	7 (5.60)	11 (11.60)	18 (8.1)	18	0.081	18	0.081
II	13 (10.30)	9 (9.50)	22 (10.0)	22	0.100	40	0.181
III	19 (15.10)	22 (23.20)	41 (18.5)	41	0.185	81	0.366
IVA	23 (18.30)	15 (15.80)	38 (17.2)	38	0.172	119	0.538
IVB	50 (39.70)	30 (31.60)	80 (36.2)	80	0.362	199	0.900
IVC	10 (7.90)	1 (1.10)	11 (5.0)	11	0.050	210	0.950
No stage	4 (3.20)	7 (7.40)	11 (5.0)	11	0.050	221	1.000
Total	**126 (57.01)**	**95 (42.99)**	**221 (100.0)**	**221**	**1**		

Confidence level of 95% ($p < 0.05$).
fi = absolute frequency, hi = relative frequency, Fi = cumulative absolute frequency, Hi = cumulative relative frequency.
Source: Database of the Department of Head and Neck Surgery of the INCan.

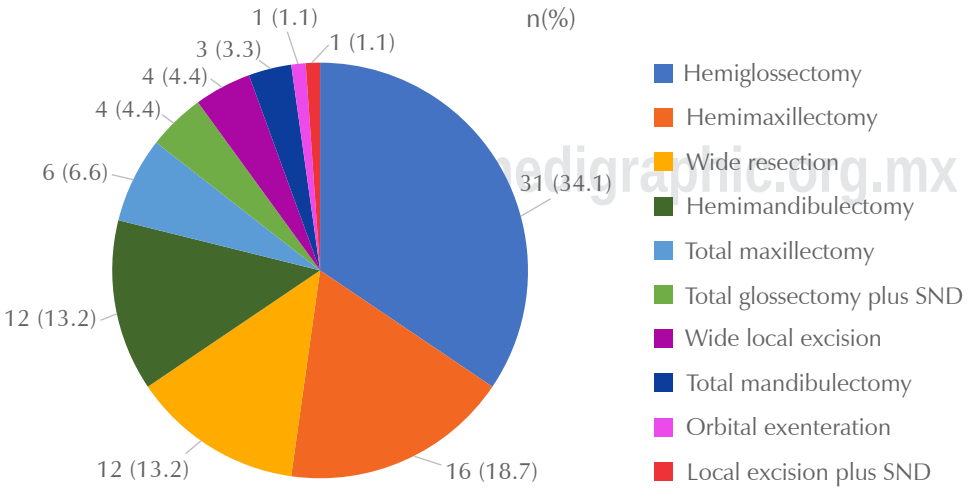

Figure 2:

Surgeries performed on patients with oral cavity cancer (OCC) at the INCan.

Source: Database of the Department of Head and Neck Surgery of the INCan. Confidence level of 95% ($p < 0.05$) SND = selective neck dissection.

The high percentage of abandonment of treatment of patients diagnosed with OCC leads us to carry out a constructive self-analysis that allows modifying health policies and the direction of resources, so that the medical specialties that have the capacity to dedicate themselves to the reconstruction of the defects that the surgery entails, can work and function efficiently.

This study has the limitations of not knowing the reason why patients chose to drop out of treatment, not knowing the reason for performing so little reconstructive surgery in our institute, as well as not knowing the definitive histopathological diagnoses of each of the malignant neoplasms of the oral cavity, which leads to the need for future studies that allow us to identify these shortcomings and provide more accurate results to establish policies that improve the follow-up and protocol of our patients.

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