Pergamon

Oral Oncol, Eur J Cancer, Vol. 31B, No. 1, pp. 37–40, 1995

0964–1955/95 $9.50+0.00

0964-1955(94)00024-7

Cancer of the Mobile Tongue in Mexico. A Retrospective Study of 170 Patients

V. Ramirez-Amador, L. Esquivel-Pedraza, F.J. Ochoa-Carrillo, A. Cuapio-Ortiz, M. Frias-Mendivil, A. Meneses-Garcia and G. Sanchez-Mejorada

Histological reports of 170 patients with cancer of the mobile tongue between 1977 and 1989 were identified at the Instituto Nacional de Cancerología (INCan), in Mexico City. Demographic, clinical and histological information was retrospectively reviewed. Chi-square, Student's *t*-test and Wilcoxon rank-sum test were applied for comparisons, and Kaplan–Meier curves, log-rank test and Cox proportional hazards for survival analysis. Of the 161 patients with mobile tongue squamous cell carcinoma (MTSCC), 104 (65%) were males and 57 (35%) were females. The mean age was 60 years old (range 19–91). T1 and T2 lesions comprised 35%, T3 and T4 lesions 65%. There was a statistically significant association between size of the tumour and lymph node involvement ($P<0.0001$). The proportion of cases with advanced disease was 80% for males and 57% for females ($P=0.008$). The 5-year survival rate was 16% (CI 10.2–22.8%). Cancer of the mobile tongue in Mexico still has a poor prognosis. Efforts should be made to reduce the delay in diagnosis of MTSCC, in order to increase the cure rates and improve the quality of life of the patients.

Keywords: squamous cell carcinoma, mouth neoplasms, mouth mucosa, mouth diseases, tongue neoplasms

Oral Oncol, Eur J Cancer, Vol. 31B, No. 1, pp. 37–40, 1995.

INTRODUCTION

FEW EPIDEMIOLOGICAL studies have been published regarding oral cancer in Latin American countries [1–3]. In Mexico City it has been reported that for 1989, of all malignancies, oral cancer rated 15th and 19th place for males and females, respectively [4]. Cancer of the tongue is the most frequent neoplasm among all intraoral malignant tumours, accounting for about 30% of those malignancies, of which, the mobile tongue comprises more than 50% [1, 5, 6]. The purpose of this report is to provide information based on 170 patients with cancer of the mobile tongue referred to an oncology centre in Mexico City.

PATIENTS AND METHODS

The present study was performed at the Instituto Nacional de Cancerología (INCan), which is a referral centre for cancer patients nationwide. More than two-thirds of the patients that attend this centre belong to deprived socioeconomic sectors of the population.

Histological reports of malignant neoplasia involving the mobile tongue between 1977 and 1989 were identified at the Pathology Department of the INCan, in Mexico City. Clinical and histological information registered in the hospital charts were retrospectively reviewed. The recorded data included sex, age and clinical characteristics of the tumour such as primary site, location and size of the lesions, accompanying signs and symptoms and the presence of lymph nodes. Information related to the number and type of physicians consulted previous to referral, therapeutic procedures and follow-up was also considered.

Mobile tongue was considered to be the segment comprised from the anterior lingual area to the circumvallate papillae (ICD-O 141.1,2,3) [7]. The staging of the lesions was based on the assessment of the size of the primary tumour (T) and regional lymph node (N) involvement, in accordance with the TNM classification [7]. Distant metastasis was not considered because of the lack of information in the clinical chart. Patients with any treatment before referral were excluded from the study.

Considering the retrospective nature of this study, in some variables information could not be gathered for all patients. Data of frequency are presented using as a denominator the number of patients for whom the information was available.

Correspondence to V. Ramirez-Amador at Camino Sta. Teresa 277-9, 14010 Mexico City, Mexico.
V. Ramirez-Amador, L. Esquivel-Pedraza and A. Cuapio-Ortiz are at the the Universidad Autonoma Metropolitana-Xochimilco, Department of Health Care, Calz. del Hueso 1100, 04960 Mexico City; F.J. Ochoa-Carrillo, M. Frias-Mendivil, A. Meneses-Garcia and G. Sanchez-Mejorada are at the Instituto Nacional de Cancerologia, Av. San Fernando 22, 14000 Mexico City, Mexico.
Received 26 April 1994, provisionally accepted 2 June 1994; revised manuscript received 17 July 1994.

Statistical evaluation was performed only in patients with squamous cell carcinoma (SCC). Chi-square, Student's *t* and Wilcoxon rank-sum tests were used to evaluate differences between groups, using $P<0.05$ as criteria for statistical significance. For survival analysis, Kaplan–Meier curves, log-rank test and Cox proportional hazards analysis were used to estimate and compare the probability of survival in those patients in whom there was at least one follow-up visit. Patients lost with tumoral activity were considered as death events, at the time of their last visit.

RESULTS

Of the 170 patients with a malignant neoplasm of the mobile tongue, 108 (63.5%) were males and 62 (36.5%) were females. The ages ranged from 19 to 91 years with a mean of 60. Squamous cell carcinoma was found in 161 patients (95%), adenocarcinoma, mucoepidermoid and verrucous carcinomas were found in 3, 2 and 1 patient respectively. Two cases of lymphoma and one of metastasis from the kidney were registered.

The age and sex distribution of the 161 patients with mobile tongue squamous cell carcinoma (MTSCC) is shown in Fig. 1. The SCC was histologically well differentiated in 84 (52%) cases, moderately differentiated in 65 (40%) and poorly differentiated in only 9 (6%). The rest were two *in situ* carcinomas and one SCC not classified. The mean diameter of the MTSCC lesions was 3.9 cm, range 0.3–8 cm. While T1 and T2 lesions comprised 16.5 and 18% respectively, T3 and T4 lesions comprised 24 and 41%. Lymph nodes were clinically positive in 79/141 (56%) of the patients. There was a statistical significant association between size of the tumour and lymph node involvement ($P<0.0001$).

Overall, 100/139 (72%) of the patients were in stages III or IV, of whom there were 72 males and 28 females. The proportion of patients at late stages of disease was significantly higher ($P=0.008$) for males (80%) than for females (57%).

At the time of admittance at the INCan, the clinical aspect of the MTSCC was exclusively exophytic in 27 patients (17%) and exclusively ulcerated in 22 (14%). In 101 (63%) patients, there was a mixed appearance with an exophytic or ulcerative component. Other related clinical findings are enlisted in Table 1.

The primary site of SCC was the mobile tongue in 120/160 (75%) cases, the base of the tongue in 9 (6%) and undefined site of the tongue in 17 patients (11%). In 14 (9%) patients, the origin was extralingual. The frequency of SCC involvement in the different anatomical sites of the mobile tongue is depicted in Fig. 2. Overall, the lateral borders were implicated in 143/161 patients (89%). The tumour extended, in 106 cases (66%), into the following neighbouring tissues: base of the tongue in 68 (64%), floor of the mouth in 67 (63%), anterior pillars in 34 (32%), retromolar area in 17 (16%), tonsillar area in 15 (14%), mandible in 22 (21%). The lesions extended across the midline in 28 cases (26%).

Table 1. Signs and symptoms of 161 patients with lingual squamous cell carcinoma

Sign and symptom	*n*	%
Pain	120	74
Dysphagia	73	45
Tongue immobility	53	33
Haemorrhagic areas	38	24
Phonation difficulties	17	10
Secondary infection	12	7
Trismus	6	4

Of a total of 107 patients, 11 (10%) sought their first medical care directly at the INCan; 50 (47%) and 46 (43%) consulted one and more than one clinician, respectively, prior to their referral to this institute. In 73 cases the type of clinician consulted was known: general medical practitioners 52 (71%); oncologists 8 (11%); dental practitioners 5 (7%); dermatologist, otolaryngologist, internist, two each (3%); radiologist and plastic surgeon, one each (1%).

Therapeutic procedures performed for MTSCC lesions, which mainly included surgery (23%) and its combination with radiotherapy (26.5%), are described in Table 2. The surgical procedures performed are enlisted in Table 3. Of the 161 patients, 23 (14%) did not receive any treatment.

The observation period of patients ranged from 1 to 132 months with a mean of 16 months and a median of 6 months. 109 patients (68%) were lost to follow-up, 90% of them with active tumour.

Figure 3 shows the global survival probability which was 35% (CI 27.7–42.9) at 1 year, 16% (CI 10.2–22.8%) at 5 years and 13% (CI 6.4–21.3) at 10 years. Statistical differences were found when the survival rates were compared by stage of the disease (log-rank $P<0.001$) and histological differentiation (log-rank $P=0.023$). Cox proportional hazards analysis disclosed an odds ratio of 1.6 (95% CI 1.29–2) for stage of the disease and an odds ratio of 1.6 (95% CI 1.1–2.3) for

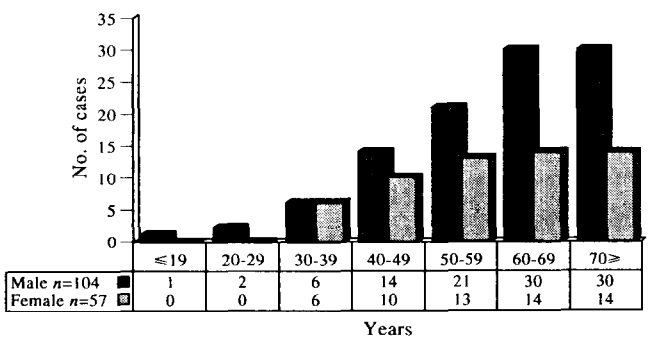

Fig. 1. Distribution of squamous cell carcinoma by age and gender.

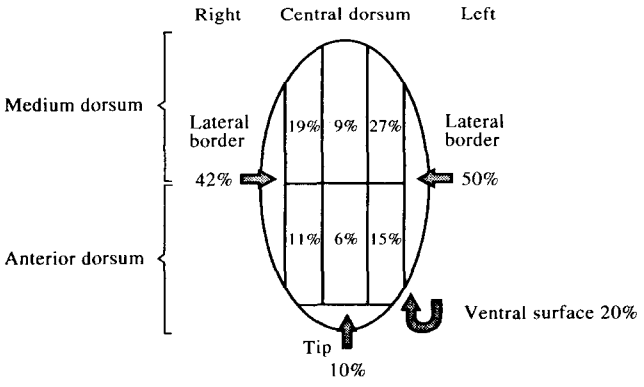

Fig. 2. Involved areas of squamous cell carcinoma in mobile tongue.

Table 2. Therapeutic procedures by stage

Treatment	Clinical stages I (n=14) n	(%)	II (n=21) n	(%)	III (n=24) n	(%)	IV (n=54) n	(%)	No data* (n=19) n	(%)	Total (n=132) n	(%)
Surgery (Sx)	8	(57)	7	(33)	8	(33)	5	(9)	3	(16)	31	(23)
Chemotherapy (Chx)	—	—	2	(9)	3	(12)	4	(7)	—	—	9	(7)
Radiotherapy (Rx)	1	(7)	4	(19)	2	(8)	17	(31)	4	(21)	28	(21)
Sx + Rx	4	(29)	7	(33)	6	(25)	13	(24)	5	(26)	35	(26)
Sx + Chx	—	—	1	(5)	—	—	1	(2)	—	—	2	(1)
Rx + Chx	—	—	—	—	3	(12)	9	(17)	1	(5)	13	(10)
Sx + Rx + Chx	1	(7)	—	—	2	(8)	5	(9)	6	(32)	14	(11)

* Unknown clinical stage.

Table 3. Surgical procedures in 69 patients with squamous cell carcinoma, by clinical stages

Procedures	Clinical stages I (n=13) n	(%)	II (n=14) n	(%)	III (n=13) n	(%)	IV (n=17) n	(%)	No data* (n=12) n	(%)	Total (n=69) n	(%)
Glossectomy†	6	(46)	7	(50)	3	(23)	1	(6)	2	(17)	19	(27)
Glossectomy† plus radical neck dissection (RND)	7	(54)	5	(36)	6	(46)	2	(12)	8	(67)	28	(41)
Glossectomy† plus (RND) and mandible resection	—	—	2	(14)	4	(31)	14	(82)	2	(17)	22	(32)

* Unknown clinical stage. † Includes partial resection, hemi- and total glossectomy.

histological differentiation. No statistical difference was found when adjusted for sex (log-rank $P > 0.05$).

DISCUSSION

As has been frequently reported [5, 8–9], in the present study squamous cell carcinoma accounted for the majority of lingual malignancies. However, the tongue can be the site of other small groups of malignant tumours that arise from structures other than the surface epithelium. Among these are the neoplasms which originate in the lingual glands. In 2 patients, the lymphoid tissue of the tongue was the focus of origin of lymphoma [8], and, as reported by others [10], a case of metastasis from the kidney was also found.

As informed in other series [5–6, 8, 11], the MTSCC occurred more often in males and in patients with more than 50 years of age. Nonetheless, SCC can be found at an earlier age, as shown by the 9% of our patients who were younger than 40 years of age. This finding is shared by others [11–14].

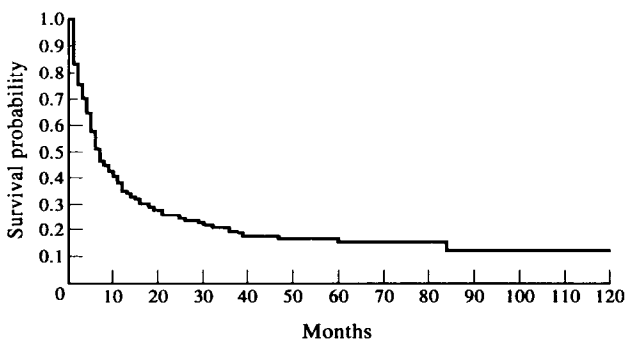

Fig. 3. Global survival probability of patients with squamous cell carcinoma of the mobile tongue.

The male-to-female ratio in this study was 1.8:1. In the recent literature the ratio varies from 1.2 to 2.4 [6, 15].

In agreement with the literature [6, 8, 9], most of the MTSCC in this study frequently involved the lateral borders, thus reflecting the susceptibility of this area to the development of carcinoma. The histological grading of our cases revealed, as in other reports [14, 16], that well-differentiated lesions were the most common.

The signs and symptoms of the oral malignancies in our patients, such as swelling, pain, dysphagia, tongue immobility, areas of bleeding, dorsal involvement and spread to neighbouring tissues, are consistent with advanced lesions. These findings coincide with the fact that two-thirds of the lesions had a size $\geqslant 4$ cm with clinical involvement of nodes in 56% of the cases. It is interesting to note that there were more females with lesions at earlier stages of the disease than males, as reported elsewhere [17].

Therapeutic procedures performed at our institute were in agreement with the actual management of cancer of the mobile tongue, with surgery being preferred for patients at earlier stages, and surgery and supplementary radiotherapy for those at later stages [18]. However, treatment results could not be evaluated because of the short period of follow-up of our patients.

In contrast with some authors [19, 20], most of our patients were referred by general medical practitioners and only 5 patients consulted a dentist; besides, almost half of the patients had seen more than one clinician before their first consultation at the INCan. These findings suggest a restricted competence

of some practitioners to diagnose oral carcinomas and the limited role of dentists in the detection of such tumours.

The high withdrawal rate of patients and the short period of follow-up in an important proportion of our cases, and the considerable percentage of untreated patients, were striking findings of the current study. Drastic therapeutic procedures which offer a precarious quality of life and the possibility of treatment failure due to advanced stages of the disease could explain these results, however, the loss of patients was also observed at early stages. The low socioeconomic status of the majority of our patients, which is probably reflected in their incapacity to cover the cost of treatment, may also have influenced their loss.

It has been proposed that the survival rates for patients with oral cancer vary, depending on several factors such as age, sex, primary site of the tumour, stage of the tumoral lesions, therapeutic procedures, Karnofsky performance status and histological differentiation of the malignancy [5]. In our study, of those variables analysed, only stage of the disease and histological differentiation were found to be related to survival probability, as observed by others [1, 5, 16]. It has been reported that, despite good access for examinations, cancer of the tongue has a poor prognosis [1, 17]. It is disturbing that in contrast with the reported survival rate in other series ranging from 32 to 26% [13, 17], in our series the survival probability at 5 years was only 16%. This poor prognosis is probably related to the extensive tumoral lesions presented by the majority of our patients.

CONCLUSIONS

Cancer of the mobile tongue in Mexico still has a poor prognosis. Early diagnosis of oral cancer followed by adequate treatment is the most effective way to increase the cure rates and improve the quality of life of the patients. The oral mucosa of the mobile tongue is easily examined and readily reveals abnormal changes, so efforts should be made to reduce the delay in diagnosis of MTSCC by alerting the public to examine their mouths regularly, particularly if an unusual complaint persists for more than 3 weeks.

1. Fischman SL, Martinez I. Oral cancer in Puerto Rico. *J Surg Oncol* 1977, **9**, 163–169.
2. Franco EL, Kowalski LP, Oliveira BV, *et al.* Risk factors for oral cancer in Brazil: a case–control study. *Int J Cancer* 1989, **43**, 992–1000.
3. Oreggia F, De Stefani E, Correa P, Fierro L. Risk factors for cancer of the tongue in Uruguay. *Cancer* 1991, **67**, 180–183.
4. Morbilidad por neoplasias malignas en el Distrito Federal. 1982–1989. Resultados del Registro Nacional del Cáncer. Compendio de estadisticas. *Registro Nacional del Cáncer/DGE/SSA.* Mexico, 1993.
5. Silverman S Jr, Gorsky M. Epidemiologic and demographic update in oral cancer: California and national data—1973 to 1985. *J Am Dent Assoc* 1990, **120**, 495–499.
6. Mashberg A, Merletti F, Boffeta P, *et al.* Appearance, site of occurrence, and physical and clinical characteristics of oral carcinoma in Torino, Italy. *Cancer* 1989, **63**, 2522–2527.
7. Beahrs OH, Myers MH, eds. *Manual for Staging of Cancer.* Philadelphia, JB Lippincott Company, 1983.
8. Frazel EL, Lucas JC. Cancer of the tongue. *Cancer* 1962, **15**, 1085–1099.
9. Flamant R, Hayem M, Lazar P, Denoix P. Cancer of the tongue. A study of 904 cases. *Cancer* 1964, **17**, 377–385.
10. Zachariades N. Neoplasms metastatic to the mouth, jaws and surrounding tissues. *J Cranio-Maxillo-Fac Surg* 1989, **17**, 283–290.
11. Jovanovic A, Schulten EAJM, Kostense PJ, Snow GB, Van der Waal I. Squamous cell carcinoma of the lip and oral cavity in the Netherlands; an epidemiological study of 740 patients. *J Cranio-Maxillo-Fac Surg* 1993, **21**, 149–152.
12. Krolls SO, Hoffman S. Squamous cell carcinoma of the oral soft tissues: a statistical analysis of 14,253 cases by age, sex, and race of patients. *J Am Dent Assoc* 1976, **92**, 571–574.
13. Decroix Y, Ghossein NA. Experience of the Curie Institute in treatment of cancer of the mobile tongue. I. Treatment policies and result. *Cancer* 1981, **47**, 496–502.
14. Krutchkoff DJ, Chen J, Eisenberg E, Katz RV. Oral cancer: a survey of 566 cases from the University of Connecticut Oral Pathology Service, 1975–1986. *Oral Surg Oral Med Oral Pathol* 1990, **70**, 192–198.
15. Moller H. Changing incidence of cancer of the tongue, oral cavity, and pharynx in Denmark. *J Oral Pathol Med* 1989, **18**, 224–229.
16. Gamel JW, Jones AS. Squamous carcinoma of the head and neck: cured fraction and median survival time as functions of age, sex, histologic type, and node status. *Br J Cancer* 1993, **67**, 1071–1075.
17. Binnie WH, Rankin KV. Epidemiological and diagnostic aspects of oral squamous cell carcinoma. *J Oral Pathol* 1984, **13**, 333–341.
18. Bundgaard T, Tandrup O, Elbrond O. A functional evaluation of patients treated for oral cancer. A prospective study. *Int J Oral Maxillofac Surg* 1993, **22**, 28–34.
19. Scully C, Malamos D, Levers BGH, Porter SR, Prime SS. Sources and patterns of referrals of oral cancer: role of general practitioners. *Br Med J* 1986, **293**, 599–602.
20. Dimitroulis, G, Reade P, Wiesenfeld D. Referral patterns of patients with oral squamous cell carcinoma, Australia. *Oral Oncol, Eur J Cancer* 1992, **28B**, 23–27.