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Surgery alone provides long-term survival rates comparable to those of surgery plus postoperative radiotherapy for patients with adenoid cystic carcinoma of the palate

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SUMMARY

We compared the outcomes and rates of survival provided by surgery alone and surgery combined with postoperative radiotherapy for patients with adenoid cystic carcinoma of the palate (ACP), a rare, low-grade malignant tumor arising within the salivary glands.

Fifty-eight patients with ACP were included in this retrospective study. ACP at stages T_1, T_2, T_3, and T_4 was found in 11, 32, 5, and 10 patients, respectively. The patients were treated with surgery alone or underwent surgery combined with postoperative radiotherapy.

The 5, 10, and 15 year survival rates were 75%, 37.5%, and 25%, respectively, among the 24 patients who underwent surgery alone. These were not significantly different from the rates of 70.6%, 35.3%, and 20.8%, respectively, among the 34 patients who underwent surgery plus postoperative radiotherapy ($P = 0.21$). The 5 and 10 year survival rates were significantly greater among patients receiving $\geqslant$60 Gy of radiotherapy than those among patients receiving <60 Gy of radiotherapy (83.3% and 45.8% vs. 40.0% and 10.0%, respectively) ($P = 0.04$). ACP exhibited good long-term survival rates when treated with surgery alone. Addition of postoperative radiotherapy at doses of $\geqslant$60 Gy had no effect on survival, but postoperative radiotherapy at doses of <60 Gy reduced survival. Recurrence within the palate was the main cause of treatment failure.

Introduction

Adenoid cystic carcinoma is a low-grade malignant tumor arising within the salivary glands that accounts for fewer than 5% of all head and neck tumors.[1] Adenoid cystic carcinoma can arise from all major salivary glands including the parotid, sublingual, submaxillary glands, and minor salivary glands. When it arises from the minor salivary glands, it occurs primarily in the palate and is known as adenoid cystic carcinoma of the palate (ACP). Its characteristic pathologic features are perineural spread, local recurrence, and distant metastasis.[2] It may invade the skull base through the cranial nerves but seldom exhibits lymph node metastasis to the neck and head region. Distant metastases of ACP are primarily found in the lung, and ACP usually has a favorable prognosis.[3,4]

Currently, there is no consensus on the clinical treatment of ACP, but surgery is recommended for the early stages. For advanced ACP, physicians often use comprehensive treatment including surgery and postoperative radiotherapy. The target region for radiation frequently includes the skull base, and the dose of radiation is usually greater than 60 Gy. However, prophylactic radiation of the lymph nodes in the neck is not recommended.[5]

In this study, we evaluated the efficacy of different treatments for patients with ACP with special emphasis on a comparison of treatment strategies including surgery with and without postoperative radiotherapy, the amount of radiation used (i.e., <60 Gy vs. $\geqslant$60 Gy), and the effects of these strategies on rates of survival and recurrence.

Patients and methods

Patients

We retrospectively analyzed the cases of a total of 58 patients with ACP (28 men and 30 women with a median age of 48 years

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[range: 25–74 years]) who were admitted to the cancer center of the Sun Yat-Sen University from April 1971 to April 2006. These 58 patients accounted for 23.7% (58/245) of all patients with adenoid cystic carcinomas of the head and neck and 10.5% (58/554) of all those with cancers of the palate. Forty-three of the 58 patients had ACP of the hard palate, and 15 had ACP of the soft palate.

Staging was performed according to the criteria for oral cancer developed by the International Union against Cancer (UICC). ACP at stages T_1, T_2, T_3, and T_4 was found in 11, 32, 5, and 10 patients, respectively (Table 1). A painless mass in the palate was the primary initial presentation (48/58), although seven patients had pain (four had pain alone, and three had pain and a mass in the palate at presentation). In addition, two patients had ulceration of the palate and one was admitted to the hospital because of palatal perforation. Cervical lymph node metastases were found in three patients, of whom two had submandibular lymph node metastasis and one had deep cervical lymph node metastasis.

Treatment

Twenty-four patients underwent surgery alone (stages T_1, $n = 1$; T_2, $n = 15$; T_3; $n = 4$, and T_4, $n = 4$); and 34 patients received surgery in combination with postoperative radiotherapy (stages T_1, $n = 10$; T_2, $n = 17$; T_3, $n = 1$; and T_4, $n = 6$). Palatal tumor resection was performed in 19 patients, maxillectomy in 19, partial maxillectomy plus carotid artery ligation in nine, and radical palatal tumor resection in 11 (three underwent unilateral neck lymph node dissection because of lymph node metastasis). Radiotherapy was performed with photons from 60Co or a linear accelerator (6 MV) with/without 9–12 MeV electrons. Wedge filtration plates were applied for dose adjustment. The irradiated region included the skull base in 29 of 34 patients. Four of these 29 patients were treated with an oral tube, and two of 34 underwent brachytherapy. The dose of radiation (D_T) ranged from 40 to 78 Gy (median: 68 Gy). Additional chemotherapy was conducted in three patients because of recurrence or metastasis, and the regimens included cisplatin or BPF (cisplatin, bleomycin, and 5-fluorouracil).

Follow-up

The median follow-up period was 88.2 months (range: 5.3–260.5 months), and follow-up was longer than 10 years among 42 patients. The follow-up rate was 91.4%, and data from patients lost to follow-up were censored.

Statistical analysis

Patient characteristics and survival/recurrence-free survival were compared with the log rank test. Kaplan–Meier curves were used to demonstrate survival. Data were analyzed with SPSS 15.0 (SPSS, Inc., Chicago, IL, USA). A P value <0.05 was considered statistically significant.

Results

Long-term survival, recurrence-free survival, and their relationship to treatment

We found that the long-term survival (although not recurrence-free survival) for patients with ACP was dependent on the stage at the time of diagnosis (Tables 1 and 2). Regarding the effects of treatment, as shown in Table 1, there was no significant difference in the 5, 10, and 15 year survival rates between patients who underwent surgery alone and those who underwent surgery plus post-operative radiotherapy ($P = 0.21$). However, the rates of survival of patients who were treated with surgery plus radiotherapy at ⩾60 Gy were significantly greater than those of the patients treated with surgery plus radiotherapy at <60 Gy ($P = 0.004$). In contrast, the treatment strategy had no significant effects on the rates of recurrence-free survival (Table 2).

Kaplan–Meier analysis showed that the overall rate of survival for patients who were treated with surgery plus postoperative radiotherapy at ⩾60 Gy was higher during the first 10 years than that of patients who received surgery alone, although it became lower thereafter (Fig. 1a). This pattern was not significant for the recurrence-free survival rate (Fig. 1b).

Table 1
Survival rates among 58 patients with adenoid cystic carcinoma of the palate.

Clinical characteristic	N	Overall survival rate (%)			P Value
		5 Year	10 Year	15 Year	
Sex					0.373
Men	28	71.4	39.3	21.4	
Women	30	73.3	33.3	20.0	
Age, yr					0.555
<50	30	73.3	40.0	23.3	
⩾50	28	71.4	32.1	17.9	
Site					0.675
Soft palate	15	73.3	46.7	26.7	
Hard palate	43	72.1	32.6	18.6	
T stage					0.017*
T_1	11	72.7	45.5	18.2	
T_2	32	84.4	40.6	25.0	
T_3	5	40.0	–	–	
T_4	10	50.0	30.0	20.0	
Treatment					0.210
Surgery	24	75.0	37.5	25.0	
Surgery + radiotherapy	34	70.6	35.3	17.7	
Radiotherapy dose					0.004*
<60 Gy	10	40.0	10.0	10.0	
⩾60 Gy	24	83.3	45.8	20.8	

* $P < 0.05$ Statistically significant survival by log-rank test.

Table 2
Recurrence-free survival among 58 patients with adenoid cystic carcinoma of the palate.

Clinical characteristic	N	Recurrence free survival rate (%)			P Value
		5 Year	10 Year	15 Year	
Sex					0.939
Men	28	64.3	28.6	17.9	
Women	30	63.3	20.0	10.0	
Age, yr					0.376
<50	30	63.3	23.3	13.3	
⩾50	28	64.3	25.0	14.3	
Site					0.265
Soft palate	15	66.7	46.7	26.7	
Hard palate	43	62.8	16.3	9.3	
T stage					0.435
T_1	11	72.7	36.4	18.2	
T_2	32	71.9	25.0	15.6	
T_3	5	40.0	–	–	
T_4	10	40.0	20.0	10.0	
Treatment					0.653
Surgery	24	62.5	25.0	16.7	
Surgery + radiotherapy	34	64.7	23.5	11.7	
Radiotherapy dose					0.140
<60 Gy	10	40.0	10.0	10.0	
⩾60 Gy	24	75.0	29.2	12.5	