Malignant Tumor of the Major Salivary Gland
—A Retrospective Review of 18 Patients—

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Summary: Malignant tumor of the major salivary glands is not very common and its histological condition is varied. During the 10 years following 1971, 18 cases of malignant salivary gland tumors were seen in our department. Surgery as the first step of management was the routine approach used in our hospital for all patients presenting with tumor of the major salivary glands. Five-year cumulative survival rate calculated by the actuarial method was 56% for the primary cases which underwent curative treatment.

Key words: malignant tumor—salivary gland—parotid gland—submandibular gland

Introduction

Malignant tumor of the major salivary glands is not very common and its histological condition is varied. The choice of curative therapy is surgery in most cases because of the resistance to radiotherapy. During the 10 years following 1971, surgery as the first step of management was the routine approach used in our hospital for all patients presenting with tumor of the major salivary glands.

In this paper, we analysed 19 cases of malignant tumor of the major salivary gland. For a comparative purpose, 37 cases of benign tumors of the major salivary gland treated during the same period were reviewed briefly.

Materials and Methods

During the 10 years between 1971 and 1980, 19 patients of malignant neoplasm of the major salivary glands were hospitalized in the Department of Otolaryngology, Kurume University Hospital.

Table 1 and 2 present the histological distribution of the subjects by age and sex. Among the entire 19 cases, 11 involved the parotid gland and 8 involved the submandibular gland. Their ages ranged from 39 to 73 years with a mean age of 56 years. The incidence of parotid and submandibular gland carcinoma did not differ significantly between the 9 male and 10 female subjects included in this study. Histologically there were 4 malignant pleomorphic adenomas, 4 squamous cell carcinomas, 5 adenocarcinomas, 2 adenoid cystic carcinomas, 3 mucoepidermoid carcinomas and 1 undifferentiated carcinoma. Of the 19 cases, 13 were primary cases which had not been previously treated while 6 were secondary cases which had been previously treated at some other clinics.

We treated 18 patients; curative procedures were used for 10 of 13 primary cases and 5 of 6 secondary cases; and palliative therapy was used for three primary cases. One of the 6 secondary cases was inoperable because of advanced lesion and was referred to another clinic for palliation.

The TNM classification are based on the American Joint Committee for Cancer Staging and End Results Reporting (1977).
TABLE 1
Histological distribution of malignant salivary gland tumor by age

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P : Parotid gland  S : Submandibular gland

TABLE 2
Histological distribution of malignant salivary gland tumor by sex

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Results

The results reported here will be chiefly for primary cases who underwent curative treatment. The results of primary cases who underwent palliative treatments and those of secondary cases will be described separately in the latter part of this section.

1. Primary cases which underwent curative treatment

Of the 13 primary cases, 10 cases underwent curative treatments. The treatments and results of these 10 cases are presented in Fig. 1 and briefly described by site of lesion in the following paragraphs.
Fig. 1. Management and results of primary cases of malignant salivary gland tumors

- **T.P.**: Total parotidectomy,
- **S.L.**: Superficial lobectomy,
- **Rad.**: Radiation therapy,
- **RND**: Radical neck dissection,
- **S.**: Exirpation of submandibular gland with tumor,
- **UND**: Upper neck dissection,
- **X**: Recurrence

(a) Parotid gland

1. **T1 case**
   - There was one case (case 1) in this category. This patient was a 50-year-old male with an undifferentiated carcinoma. The tumor was located in the superficial lobe and metastasis was not found. Total parotidectomy and postoperative irradiation (6000 rad) were carried out. He died from local recurrence 2 years and 1 month after treatment.

2. **T2 case**
   - There were 3 cases in this category: 2 cases (Case 2 and 3) were N0M0 and 1 case (Case 4) was N1M0.
     - Case 2: A 63-year-old male. Histological diagnosis was adenoid cystic carcinoma and tumor was located in the superficial lobe. Superficial lobectomy was performed. Eight years and 10 months after treatment, he is alive without any recurrence or metastasis.
     - Case 3: A 59-year-old female. Histological diagnosis was malignant pleomorphic adenoma, and the tumor was located in the superficial lobe. Superficial lobectomy was carried out. After 2 years and 11 months, she survives without recurrence and metastasis.
     - Case 4: A 63-year-old female. Histological diagnosis was malignant pleomorphic adenoma, and the tumor was located in the both lobes. Total parotidectomy and radical neck dissection were performed. Eight years and 7 months after treatment, she is alive without recurrence and metastasis.
(3) T3 case

There was 1 case (Case 5) in this category and she was classified as HOMO.

Case 5 was a 61-year-old female. Histological diagnosis was squamous cell carcinoma. The tumor was located in the superficial lobe. Spontaneous peripheral facial nerve palsy was found. Total parotidectomy was performed. One year after, partial resection of the auditory canal with mastoidectomy and postoperative irradiation were performed for a recurrence which invaded the auditory canal. She died with local recurrence 2 years and 2 months after the first treatment.

(4) T4 case

The only case (Case 6) in this category was classified as NOMO.

Case 6 was a 45-year-old female. Histological diagnosis was malignant pleomorphic adenoma. The tumor was located in the deep lobe. Total parotidectomy was carried out. Seven years and 11 months post operatively she has no recurrence or metastasis.

(b) Submandibular gland

Four patients (Case 7-10) were treated with curative procedures. Treatments and results are described as follows:

(1) T2 case

There were 3 cases in this category. Two (Case 7, 8) of these cases were N0, one (Case 9) was N3a and all three were M0.

Case 7 was a 49-year-old female. Histological diagnosis was adenocarcinoma. Exterpation of the submandibular gland with tumor and radical neck dissection were performed. After one year, recurrence of the submental region was found and was exirpated. Two years and 1 month after the first treatment, she is alive without recurrence and metastasis.

Case 8 was a 61-year-old female. Histological diagnosis was adenocarcinoma. Exirpation of the submandibular gland with tumor was performed. One year and 9 months after, lymphnode swelling of the neck was found and radical neck dissection was performed: however, no malignancy could be identified. No recurrence was found 3 years and one month after the first treatment.

Case 9 was a 73-year-old male. Histological diagnosis was squamous cell carcinoma. Preoperative irradiation (3000 rad) and radical neck dissection were performed. Ten months after treatment, he died from pulmonary metastasis.

(2) T3 case

There was 1 case (Case 10) in this category, and she was classified as NOMO.

Case 10 was a 62-year-old female. Histological diagnosis was mucoepidermoid carcinoma. Exterpation of the submandibular gland with tumor and upper neck dissection were carried out. Four months after, local recurrence was found and we performed a radical neck dissection. One month later, local recurrence was again found and it was surgically removed. Four months later, local recurrence was found again but she refused further treatments. Two years and 1 month after the first treatment, she died from local recurrence.

Five-year cumulative survival rate calculated by the actuarial method was 56% for the 10 cases described above.

2. Secondary cases which underwent curative treatment

Six patients included in this study had been previously treated at other hospitals and were sent to our hospital for recurrence. Of these 6, 5 patients were curatively treated whereas the other refused further surgery. Of the former 5, 3 involved the parotid gland and 2 the submandibular gland. The treatments and results are presented in Fig. 2 and described below.

(a) Parotid gland

Three patients (Case 11-13) underwent curative treatment for local recurrence.
MALIGNANT TUMOR OF SALIVARY GLAND

Case 11 was treated with extirpation of the tumor and partial mandibulectomy, but he died from unknown cause 2 years later. Case 12 was treated with total parotidectomy and he is alive without recurrence or metastasis 6 years and 6 months postoperatively. Case 13 had a radical neck dissection and has no evidence of recurrence or metastasis.

(b) Submandibular gland

Two patients (Case 14, 15) underwent curative treatments. Case 14 was treated with radical neck dissection for metastasis of the neck, but 3 months later, recurrence of the neck was found. Surgical removal and application of Bleomycine were carried out, but local recurrence was again found 1 month later. He refused further treatment and died 5 months later. Case 15 underwent extirpation of the tumor and segmental mandibulectomy for recurrence of carcinoma at the floor of the mouth and she had no recurrence at the time of her last evaluation 6 years and 3 months after surgery.

3. Palliatively treated cases

There were three cases in this category with no history of previous treatment; 1 case involved the parotid gland and the other 2 cases involved the submandibular gland. One case refused the treatment, one was found to have pulmonary metastasis and the other case was considered to be inoperable. Radiation or chemotherapy was carried out for all 3 patients, but all died from the tumor.

Benign Tumor of the Major Salivary Gland

During the same period, 37 patients with benign tumors of the major salivary gland were treated. Among the entire group the tumors were located in the parotid gland in 29 patients and the submandibular gland in 8 patients. The histological distribution by age and sex are presented in Table 3 and 4 respectively. Pleomorphic adenoma was diagnosed in 28 cases (76%), 20 cases of these were located in the parotid gland 8 cases were in the submandibular...
TABLE 3
Histological distribution of benign salivary gland tumor by age

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R : Parotid gland  S : Submandibular gland

TABLE 4
Histological distribution of benign salivary gland tumor by sex

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gland. Warthin's tumor was present in 5 cases (14%). The age of subjects with benign parotid tumor ranged from 17 to 76 years with the mean age of 42 years. Subjects with benign submandibular gland tumor ranged in age from 26 to 51 years with the mean age of 44 years. Benign tumor of the parotid gland subjects included 12 males and 17 females, and the pleomorphic adenoma group included 7 males and 13 females. All patients with Warthin's tumor were males. All of the benign tumors of the submandibular gland were pleomorphic adenoma, and included 5 male cases and 3 female cases. The location of benign parotid tumors was the superficial lobe in 27 cases (93%) and the deep lobe in 2 cases (7%).

All of the 37 patients were surgically treated and no recurrence was found.

Discussion

Tumors of the major salivary glands are not very common. For example, Lenox et al. (1978) reported that the incidence of all major salivary gland tumors exceeded 40/million population yearly. Eneroth (1970) presented 2311 patients with salivary gland tumors and 480 cases of these were malignant tumors.

The surgical procedure is the only curative management because of its resistance
to radiotherapy (Kitamura et al. 1971). We performed surgical procedures, such as superficial lobectomy, total parotidectomy, extirpation of submandibular gland with tumor, radical neck dissection and mandibulectomy, as the first choice of management for all major salivary gland tumor.

The prognosis of this disease appears to vary. Eneroth (1971) described that the prognosis seemed most favorable when the primary tumor was in the palate, less favorable when it was in the parotid gland, and least favorable when it was in the submandibular gland. Chin (1970) reported 5-year survival rates of the parotid malignancy being 0% for squamous cell carcinoma, 25% for adenocarcinoma, 50% for adenoid cystic carcinoma and 66.7% for malignant pleomorphic adenoma. Eneroth and Hamberger (1974) described that the prognosis of the parotid gland tumors is the best for mucoepidermoid carcinoma and acinic cell carcinoma and worst for poorly differentiated solid carcinoma, carcinoma in pleomorphic adenoma and adenoid cystic carcinoma. He also reported that in the group of the 39 patients with a facial nerve paralysis the mortality was 100%, but in the group of 239 patients without facial nerve palsy the mortality was only 33%. If spontaneous facial nerve palsy is found, we must consider that the prognosis is very poor. The results of the present review do not markedly differ from those reported in the literature mentioned above.

Rafla (1977) reported about the radiosensitivity of the malignant parotid tumor. He stated that adenocarcinoma seems to be more responsive than other types with complete regression in 48% of the cases, as compared to 35% in cylindromas, 18% in anaplastic tumors, and malignant pleomorphic adenoma appeared to be the least responsive of all types.

Therefore, in the treatment of major salivary gland cancer, not only TNM classification but also its histological malignancy should be considered. And if the prognosis seems to be poor, a combination of surgery and radiotherapy should be done.

References


