Carcinoma of the major Salivary Glands.

Analysis of the role of Radiation therapy.

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Abstract:

Forty-six patients of major salivary gland tumors were retrospectively studied. There were 40 (87%) parotid and 6 (13%) sub-mandibular tumors. Patients receiving adjuvant radiation therapy after a radical surgery fared much better (86%) complete response (CR) as compared to those treated for recurrent or inoperable disease (50% CR). The 5-year overall and disease free survival rates for the entire group is 70% and 34% respectively. These findings and a review of literature suggests that adjuvant post operative radiation therapy is recommended to reduce the risk of post surgical recurrence.

INTRODUCTION

The role of surgery and irradiation in the treatment of malignant major salivary gland tumors has undergone a transition in the past two decades. Radical surgery, which is limited due to the proximity of vital structures, does not prevent local recurrence. The recurrence rates for operable tumors after surgery alone have been variously reported at between 24% - 54% (1,2,3). In spite of the high local recurrence (LR) rates following surgical treatment, radiotherapy had seldom been used till two decades back as these tumors were thought to be radioresistant (4,5). LR rates have been shown to decrease satisfactorily with the addition of post operative radiotherapy (3,6,7). Further, no significant difference in response to radiotherapy was seen between the different histological types(1).

In this study, we report the experience of patients with carcinoma of the major salivary gland who received irradiation at the Institute Rotary cancer Hospital, New Delhi.

Materials & Methods

Forty-six patients with malignant salivary gland

tumors who had been treated with radiation therapy at Institute Rotary Cancer Hospital, New Delhi in the years 1984 - 1977 were retrospectively studied. Forty of these had primary in the parotid and 6 in the submandibular gland. Twenty-two of these patients had been referred for adjuvant postoperative radiation therapy after a radical/total parotidectomy. These patients either had documented microscopic residual disease or were assessed to be at higher risk for such on the basis of the extent of surgery or pathological features. The other 24 patients were treated by radiation for recurrent (12 patients) or inoperable disease (12 patients).

Radiation Therapy Techniques

In parotid gland tumors with residual disease or involvement of facial nerve, a pair of wedged⁶⁰ Co fields was used. In cases without facial nerve involvement and total removal of small lesions, tumor bed irradiation was provided by a combination of high energy photons (15 MV) and electrons (16 MeV) in the ratio of 50:50. The portals included the entire parotid bed extending from above the zygomatic arch (in-

cludes the infratemporal fossa) superiorly to the horizontal ramus of mandible inferiorly. Anteriorly, the field extended till the anterior border of the masseter and posteriorly included the ear or mastoid to cover the posterior part of parotid gland and the facial nerve. The ipsilateral neck was treated with electron beam in cases of positive nodes or tumors with connective tissue or perineural lymphatic invasion. Submandibular gland tumors were treated with a direct photon/electron field.

Treatment in all patients was at a rate of 1000 cGy per week with five fractions per week. Total dose ranged from 8 to 60 Gy with a median dose of 56 Gy. At follow up, recurrences were recorded as local, nodal or distant on the basis of site of recurrence. The survival statistics were computed from the data of first treatment using BMDP software.

Results

There were 26 males and 20 females. The median age of the group was 45 years with a range of 15 to 85 years. The most common histological types were mucoepidermoid (21 cases) adenoid cystic carcinoma (14 cases). At a median follow up of 16 months, 25 patients were clinically disease free. Patients receiving post operative radiation in an adjuvant setting fared much better (86% CR) as compared to those treated for recurrent or inoperable disease (50 % CR). The 5 year overall and disease free survival rates for the entire group is 70% and 34% respectively.

Discussion

Although the standard treatment for carcinoma of the parotid & submandibular gland remains surgery, radiotherapy has an established role. A number of authors have shown improved local control when radiotherapy has been given post operatively (8,9,10,11). Indications for radiotherapy have been suggested elsewhere (10) and include recurrent disease, high grade, unfavorable histology type, and incomplete resection of the tumor. Sykes et al, 1995 (12) suggest that post operative radiotherapy for parotid carcinomas should not

be selected on the basis of histologic type or grade and all parotid carcinomas should be treated with RT. Grading was not available for a majority of our cases and hence has not been used as predictive criteria for treatment.

The presence of inoperable or gross recurrent disease prior to radiotherapy conferred a poor outlook. A total of 24 (52%) patients in our series have gross recurrent or inoperable disease. This figure is high and may represent a referral bias among surgeons to refer only advanced disease. It may also reflect the general pattern of advanced stage disease at presentation seen on our part of the world. The use of neutrons has been investigated by authors and suggested as the treatment of choice for inoperable parotid tumors (13). The RTOG - MRC trial (14) has shown improved local control but not survival, in a randomized controlled trial of neutrons versus photons. In a series reported from M.D. Anderson hospital in 1971, local control was obtained in 81% of patients with recurrent or inoperable disease (15). While other series (16,17) indicate that gross disease might be less successfully treated.

No comment can be made regarding the efficacy of radiation therapy in recurrent or inoperable disease based on this study.

Cervical metastasis developed in 11 (24%) patients and distant metastases in 4(9%). The incidence of neck failure is higher in our series compared to other reports (18,19). This is primarily because of a large number of inoperable and recurrent diseases where control of primary could not be achieved. In patients receiving post operative adjuvant radiotherapy, neck failure was observed in 3 (14%) patients which is similar to other reported series. Armstrong et al, 1992 in their review of 474 patient (20) of major salivary gland cancers suggested either elective neck dissection (incorporating at least levels 1,2 and 3) at the time of surgery for the primary tumor or elective post operative neck irradiation for those patients in whom post operative radiation therapy to the primary tumor bed is being carried out in cases with clinically occult neck node disease.

The incidence of distant metastasis has been variously reported between 12-26% (1,19,21). The short median follow up of our patients explains the lower incidence of distant metastases as compared to other series. Comparisons with other series are difficult because of different patient selection criteria and different treatment schedules used. However, a similarity in outcome has been observed (Table I).

This report demonstrates that residual micro-

scopic disease in the salivary gland or surgical field after surgery can be controlled effectively by radiation therapy. Local control was obtained in 86% of patients with the addition of early elective radiation therapy. On the other hand, established recurrent disease is poorly controlled. New methods of treatment should be explored in this group of patients. The value of chemotherapy and/or immunotherapy as adjuvants to surgery and radiotherapy for advanced local disease needs to be evaluated.

Table - I

Authors	Patients(n)	Treatment	5 - years survival	Locoregional control
Armstrong 1990 (6)	46	S+RT	48.9%	69.1%
Spiro 1989(15)	155	S±RT	80%	—
Fitzpatrick, 1986(16)	403	S/RT/S+RT	63%	49.6%
Present Series	46	RT/S+RT	70%	54.3%

Treatment results - Major salivary gland tumors

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