

Aggressive treatment of metastasis to the parotid

V Raut, AR Sinnathuray, WJ Primrose

Accepted 20 October 2004

SUMMARY

Objectives: Assess the value of aggressively treating metastatic lesions in the parotid, taking into account the histology of the disease.

Study Design: Retrospective analysis of 13 patients diagnosed with metastasis to the parotid treated by one surgeon in a tertiary referral head and neck unit in the United Kingdom.

Methods: The following variables were reviewed and tabulated: age, sex, histology, latent period to secondary tumour, treatment instituted, postoperative facial nerve outcome, follow-up and survival.

Results: Twelve patients were treated aggressively with at least total parotidectomy and adjunctive therapy, whilst one patient required only a superficial parotidectomy. Ten patients had metastatic cutaneous tumours, and three had metastatic adenocarcinoma. Seven of these 13 patients (53.8%) are alive and well (six had metastatic cutaneous tumours, one had metastatic adenocarcinoma). Four patients succumbed to tumour (two had metastatic cutaneous tumours and two had metastatic adenocarcinoma), and two patients succumbed from unrelated medical causes (both had metastatic cutaneous tumours). The mean follow-up for those alive is 65.9 months and mean follow-up for those deceased is 15.3 months.

Conclusions: In the absence of systemic spread, parotid metastases from primary cutaneous squamous cell carcinoma should be treated aggressively, while metastases from non-cutaneous primary tumours should be approached with caution.

INTRODUCTION

Primary benign tumours form the majority of lesions seen commonly in the parotid gland. Metastatic lesions are rare and often associated with cutaneous primary malignancies in the head and neck, although adenocarcinoma and rare metastatic lesions have been reported. As part of a combined oncology team, the head and neck surgeon will be faced with the dilemma of making a decision on the optimum management of these cases.

MATERIALS AND METHODS

A retrospective review of 13 patients with metastatic lesions in the parotid treated under one surgeon in the Department of Otolaryngology – Head and Neck Surgery at the Royal Victoria Hospital, Belfast, United Kingdom was undertaken (Table). Variables documented

included age and sex of patients, histology of tumours, primary site of tumours, clinical presentation, latent period to secondary tumour, preoperative facial nerve function, treatment instituted, postoperative facial nerve function, follow-up and survival.

Royal Victoria Hospital, Grosvenor Road, Belfast
BT12 6BA

Department of Otolaryngology – Head and Neck Surgery
V Raut, MS, DORL, DNB, FRCSI, FRCS(ORL-HNS)
AR Sinnathuray, FRCSI, FRCSI(Oto)
WJ Primrose, FRCSI

Correspondence to Mr Sinnathuray, Research Fellow,
Regional Cochlear Implant Centre, Belfast City Hospital,
Lisburn Road, Belfast BT9 7AB

E-mail: rajsinn@aol.com

TABLE

Diagnoses and outcomes of patients with parotid metastases

Case	Age, year	Sex	Histology	Latent period to secondary tumour, month	Treatment	Postoperative Facial Nerve Function	Follow-up	Survival to date, month	Survival to death, month
1-8	mean 65.4 range (59-76)	7 M: 1 F	SCC	mean 28.4 range (13-62)	6 x Total Parotidectomy + Post-op XRT: 2 x Total Parotidectomy + VII sacrifice + MRND + Latissimus Dorsi flap + Post-op XRT	5 Normal 3 Compromised	4 Alive: 4 Dead*	mean 62.8 range (40-86)	mean 16.3 range (13-22)
9-11	mean 54.3 range (52-58)	1 M: 2 F	Adeno Ca	mean 29.7 range (13-61)	3 x Total Parotidectomy + Post-op hormonal manipulation	2 Normal: 1 Compromised	1 Alive: 2 Dead	73	mean 13.5 range (13-14)
12	59	M	Basisquamous Carcinoma	63	Superficial Parotidectomy	Normal	Alive	74	
13	63	F	melanoma	8	Induction Chemotherapy + XRT + Total Parotidectomy + MRND + Latissimus Dorsi flap + Post-op Alpha-Interferon	Normal	Alive	63	

M Male

F Female

SCC Squamous cell carcinoma

AdenoCa Adenocarcinoma

XRT Radiotherapy

MRND Modified radical neck dissection

* 2 of 4 patients with squamous cell carcinoma died from non-tumour related pulmonary and cardiac causes

RESULTS

As shown in the Table, there were nine males and four females with an age range of 52-76 years (mean 62.2 years). Histologically, there was a predominance of squamous cell carcinoma, with adenocarcinoma forming the second largest group and the remaining, being isolated, unusual metastatic lesions. Ten of the 13 cases had a cutaneous primary tumour originating in the head and neck region with the most favoured sites being the scalp and the pinna (Figure). The majority of these cases from cutaneous primary tumours were squamous cell carcinoma in type.

There were three patients with metastatic adenocarcinoma; two from breast primary tumours, and one from a prostatic primary tumour.

A mass in the parotid was the sole feature in all cases. All patients, at presentation, had an intact functioning facial nerve on the side of the lesion. All patients underwent a thorough ENT and general examination, fine needle aspiration cytology of the parotid and Computed Tomography (CT) scans of the parotid, neck and chest. Those with cutaneous metastatic lesions were patients who had undergone treatment for their scalp, pinna and neck lesions previously

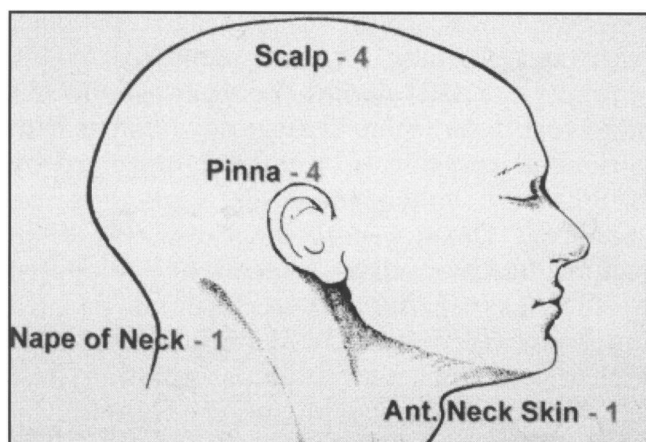


Fig. Sites of the primary tumours of skin which have metastasized to the parotid gland.

under our care. The breast carcinoma patients had been thoroughly evaluated by the breast team to rule out other systemic metastases with CT and radioisotope bone scans, while the prostatic carcinoma patient had a thorough genitourinary work-up before being referred to our department.

The latent period following the primary malignancy was variable, ranging from 8 months to 63 months (mean 29.8 months). The malignant melanoma was extremely aggressive and was the only metastatic lesion in our series that appeared within a year of treatment of the primary lesion.

The treatment options employed varied depending on the extent of the lesion as seen on the CT scan and the histology of the primary lesion. Cases with squamous cell carcinoma underwent either total parotidectomy with post-operative radiotherapy, or total parotidectomy with facial nerve sacrifice, a modified radical neck dissection and latissimus dorsi flap for skin cover, followed by post-operative radiotherapy. The three cases of metastatic adenocarcinoma underwent total parotidectomy with preservation of the facial nerve followed by post-operative hormonal therapy; tamoxifen for the breast carcinoma cases, and goserelin for the single prostatic carcinoma case. The basisquamous carcinoma presented as a 1 cm diameter single metastasis in the superficial lobe, and was completely excised by a superficial parotidectomy. The malignant melanoma presented as a very large metastatic lesion involving the parotid and the neck. This was considered unsuitable for primary surgery and the patient underwent induction chemotherapy with cisplatin and 5-fluorouracil followed by radiotherapy to initially shrink the mass, then followed by a total parotidectomy with facial

nerve preservation, modified radical neck dissection and latissimus dorsi flap. Post-operatively, the patient was treated with alpha-interferon for a period of 18 months.

At their last follow-up, four of the 13 (30.8%) patients suffered from facial nerve function compromise; in two of these cases the facial nerve had been intentionally sacrificed. Seven of the 13 patients (53.8%) are alive without any evidence of recurrence, and a mean survival to date of 65.9 months (range 40- 86 months). Six of the 13 patients (46.2%) have died with a mean survival to death of 15.3 months (range 13-22 months), although two of them died from non-tumour related causes.

DISCUSSION

Metastatic disease accounts for approximately 9 to 14% of all parotid tumours.¹ Cutaneous malignant melanoma and squamous cell carcinoma of the head and neck region account for approximately 80% of these metastases.² Seven of our 13 patients (53.8%) are alive and well, with six of these seven having had primary cutaneous tumours. Three of our patients (two with squamous cell carcinomas and one with basisquamous carcinoma) are now considered cured, having survived at least, five years since treatment of their parotid secondary tumour. In a 123-patient study of patients treated aggressively for metastatic parotid disease from cutaneous primary tumours, O'Brien *et al*³ have reported cumulative disease-specific five-year survival rates of 58% in those with metastatic cutaneous squamous cell carcinoma, and 40% in metastatic malignant melanoma. In our series, 60% (6/10) of our patients with metastases secondary to cutaneous primary tumours have no evidence of recurrence at their last review, and 20% (2/10) succumbed to causes unrelated to the original malignancy (cardiac and pulmonary).

In a review of 866 reported cases of parotid metastases, Pisani *et al*⁴ found that 92 cases (11%) originated from an infraclavicular primary tumour, indicating that a metastatic lesion in the parotid needs to be assessed and investigated quite differently from a lateral neck mass. Infraclavicular primary tumours tend to originate in the lung, kidney, breast and gastrointestinal tract, although unusual sites such as adenocarcinoma of the urachus have been reported.⁵⁻⁷ Cases with infraclavicular primary tumours generally have a poorer prognosis,

although there have been occasional documented cases with a good outcome.^{5,7} Cases with parotid metastases from non-cutaneous head and neck primary tumours also have a poorer prognosis, with a reported five-year survival rate of only 10%. In our series, two out of the three patients with parotid metastases from non-cutaneous infraclavicular primary tumours have succumbed to their disease.

O'Brien *et al*³ quoted a 26% incidence of clinically involved nodes in cases with metastatic squamous cell carcinoma to the parotid, and a further 35% of those having elective neck dissections had positive histology in the neck. These results are indicative of the likelihood of dissemination of metastatic cutaneous squamous cell carcinoma to the parotid, and indicate that treatment of the neck should be an integral part of the overall therapeutic plan, either in the form of an elective neck dissection or post-operative radiotherapy to the neck. Total parotidectomy with preservation of the facial nerve followed by post-operative radiotherapy to the parotid and neck would be the protocol we suggest for most tumours restricted to the parotid, without clinical involvement of neck nodes. The facial nerve was preserved at time of surgery in 11 of our 13 cases, with nine of these 11 cases now having normal post-operative facial nerve function. The facial nerve may, however, need to be sacrificed for larger parotid tumours involving the overlying skin, whereby preservation of the nerve (whether involved or not by tumour) may compromise surgical margins. These cases may also warrant an additional modified radical neck dissection and latissimus dorsi flap for skin cover, followed by postoperative radiotherapy.

Imaging is important if a metastatic parotid tumour is suspected, either for diagnosis or to delineate its size and invasive nature. The majority of tumours appear as low signal on magnetic resonance imaging (MRI) T1 weighting and as high signal on MRI T2 weighting. However, the paramagnetic effect of melanin causes melanotic deposits to appear instead as high signal on MRI T1 weighting and low signal on MRI T2 weighting, thus aiding in the diagnosis of malignant melanoma.⁸ In a study of 54 patients with aggressive non-melanoma skin cancer of the head and neck, 23 were found to have metastasis to the parotid or direct invasion of the gland, requiring parotidectomy for locoregional control of their disease.⁹ However, parotid involvement was only

diagnosed clinically in six of these 23 patients, with the remaining 17 cases identified by CT scanning and MRI studies. Younger patients (51 vs 75 years) were more likely to have lesions with perineural invasion ($P = 0.006$), suggested by facial nerve enhancement or thickening, on scanning. Despite parotidectomy, these 23 patients had more disease recurrence compared to the rest of the cohort without parotid involvement ($P = 0.0002$). Identification of these high-risk lesions at initial presentation, and aggressive treatment with surgery followed by post-operative radiotherapy still offers the best chance of cure for these patients.

REFERENCES

1. Batsakis JG. Pathology consultation. Parotid gland and its lymph nodes as metastatic sites. *Ann Otol Rhinol Laryngol* 1983; 92: 209-10.
2. Batsakis JG, Bautina E. Metastases to major salivary glands. *Ann Otol Rhinol Laryngol* 1990; 99: 501-3.
3. O'Brien CJ, McNeil EB, McMahan JD, Pathak I, Lauer CS. Incidence of cervical node involvement in metastatic cutaneous malignancy involving the parotid gland. *Head Neck* 2001; 23(9): 744-8.
4. Pisani P, Krenkli M, Ramponi A, Guglielmetti R, Pia F. Metastases to parotid gland from cancers of the upper airway and digestive tract. *Br J Oral Maxillofac Surg* 1998; 36(1): 54-7.
5. Park YW, Hlivko TJ. Parotid gland metastasis from renal cell carcinoma. *Laryngoscope* 2002; 112(3): 453-6.
6. Shimoyama T, Horie N, Yamada T, Ide F. Parotid lymph node metastasis from adenocarcinoma of the urachus. *Dentomaxillofac Radiol* 2000; 29(3): 185-8.
7. Raut V, Sinnathuray AR, McClean G, Brooker D. Metastatic breast carcinoma in the parapharyngeal space [Review]. *J Laryngol Otol* 2001; 115(9): 750-2.
8. Ismail Y, McLean NR, Chippindale AJ. MRI and malignant melanoma of the parotid gland. *Br J Plast Surg* 2001; 54(7): 636-7.
9. Lai SY, Weinstein GS, Chalian AA, Rosenthal DI, Weber RS. Parotidectomy in the treatment of aggressive cutaneous malignancies. *Arch Otolaryngol Head Neck Surg* 2002; 128(5): 521-6.