Temporal Bone Cancer: Frequently Originating from Auricular Cutaneous Malignancies

Abstract

Background: De novo ear and temporal bone malignancies are uncommon. In contrast, malignancies involving the auricle and peri-auricular skin are more common and notoriously difficult to control. The morbidity and mortality associated with the spread of periauricular skin malignancies to the temporal bone underscores the importance of aggressive surgical therapy of the initial neoplasm.

METHODS: A retrospective review was conducted on patients treated for ear and temporal bone cancer at the Penn State Hershey Medical Center between the years 2001 and 2006. These were analyzed according to disease site and subtype, association with prior skin cancer, prior Mohs surgery, definitive surgery, radiation therapy, margin status and outcome.

RESULTS: Eighteen cases were identified for analysis. Sixteen (89%) patients had squamous cell carcinoma (SCC) while 2 of the patients had basal cell carcinoma (BCC). The most common presentation was an auricular skin lesion seen in 9 patients (50%) followed by otorrhea (6 patients, 33%). (Table 4) Fifteen (83%) patients had carcinoma involving the EAC, the mastoid was invaded in 8 (44%) patients; the parotid was invaded in 3 (17%) patients. 14 patients had undergone prior Mohs surgery for their periauricular cutaneous malignancy. Definitive surgical treatment included 15 lateral temporal bone resections (LTBR) and 3 radical mastoidectomies. Parotidectomy was performed on 11 patients and 10 patients had a neck dissection.

CONCLUSION: Our experience with the carcinomas of the temporal bone and related structures suggests a large proportion of patients have a history of previous treated cutaneous periauricular malignancies.

Methods and Material

A retrospective chart review was conducted at our Institution for the period from July 2001 through July 2006. Patients who underwent surgical treatment for malignancies involving the external auditory canal (EAC), middle ear (ME), mastoid and/or the petrous apex were identified by using ICD-9 and CPT codes. Eighteen patients, who underwent surgical treatment for malignancies involving the ear and temporal bone were identified. Clinical presentation, site and subsite of current cancer, history of previous skin cancers, prior Mohs surgical treatment of their skin malignancy, and patients surgery for their temporal bone malignancy and outcome were recorded.

Results

Eighteen patients who underwent surgical treatment for malignancies involving the temporal bone were identified. These patients had a history of invasive cutaneous malignancy and had de novo temporal bone malignancies. There were 15 men and 3 women in our series. The age range was 40 to 90 years (Mean of 77). Sixteen of the patients (89%) had squamous cell carcinoma (SCC) while 2 of the patients had basal cell carcinoma (BCC). The most common presentation was an auricular skin lesion seen in 9 patients (50%) followed by otorrhea (6 patients, 33%). (Table 4) Fifteen (83%) patients had carcinoma involving the EAC, the mastoid was invaded in 8 (44%) patients; the parotid was invaded in 3 (17%) patients. 14 patients had undergone prior Mohs surgery for their periauricular cutaneous malignancy. Two patients had palpable cervical adenopathy and 2 patients had palpable parotid involvement at presentation. Patients with SCC were staged using the modified University of Pittsburg and patients with BCC were staged using the AJCC staging systems. Four patients (22%) were stage 1, 10 patients (56%) were stage 3, and 4 patients (22%) were stage 4. Surgical intervention included 15 lateral temporal bone resections (LTBR) and 3 radical mastoidectomies. Periostectomy was performed on 11 patients and a neck dissection was performed in 10 patients. 12 patients received postoperative radiation therapy and 1 patient had received prior radiation therapy. Reconstruction of the postsurgical site was carried out in a variety of methods. Six patients underwent a flap. 3 patients had temporalis flaps, 3 had nuchal subcutaneous free flaps, one had a rotational scalp flap and 1 had a full thickness skin graft as their reconstructive technique. Examination of the pathologic specimens revealed positive margins in 8 cases (33%). In 2 of these cases the deep bony margins were positive and in 1 case the dural margin was positive. At the time of this presentation 5 patients have died of their disease, 7 patients are alive without disease, 2 patients are alive with recurrent or metastatic disease. 4 patients were alive and free of their disease at last visit but have been lost to followup.

Discussion

Cancers arising in the external auditory canal and temporal bone are rare, comprising only 6 cases per million. In contrast, auricular and temporal cutaneous malignancies are challenging to manage and control. The thin skin overlying cartilage offers little resistance to spread of tumor and may even contribute to subclinical extension and horizontal growth along the dermis and perichondrium. Auricular and periauricular skin cancers may also spread along the embryological fusion planes of the ear.

In our series, 55% of the patients with a temporal bone cancer had auricular skin involvement at the time of presentation. 72% of patients had a previous history of auricular skin cancer. In our study, 30% of patients had a history of prior limited surgical excision or Mohs procedure which may have led to 30% of patients in our series undergoing a temporal bone resection which originated as a periauricular skin malignancy while only 22% of patients had de novo temporal bone cancer. A history of prior limited surgical excision or Mohs procedure was noted in 76% of patients in our series. This pattern of disease is similar to that found in other series. [9]

The surgical management in this series was on bloc excision with clear excision margins if possible. In our series 38% of patients had positive surgical margins that were associated with a poorer outcome. Others agree in this regard and recommended surgical extirpation with clear margins for best survival.[9]

In our series 7 patients have either died of their disease or are living with recurrent or metastatic disease. Admittedly, the follow-up period for the remainder is brief.

Operative complications were few and reconstruction with regional or free tissue flaps was overwhelming successful. Facial nerve rehabilitation when necessary was undertaken using muscle slings, tarsorrhaphy or gold weight implantation.

Although our study is not large enough to significantly identify an association between the periauricular skin malignancy and temporal bone cancer, our findings are both suggestive of this and in line with other similar studies. As in the case of numerous studies of temporal bone cancer, small sample sizes can be cited as a deficiency in this series. We believe that aggressive primary surgery and close surveillance should be considered for auricular and periauricular skin cancers and that the potential for silent spread to the external auditory canal and temporal bone should be recognized.

References