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Case Report

Squamous Cell Carcinoma of the External Auditory Canal Presenting as Chronic Suppurative Otitis Media: A Rare Case Report

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Abstract

Squamous cell carcinoma (SCC) of the temporal bone and external auditory canal is a rare tumor with a reported incidence of between 1 and 6 cases/million population/year. Because SCC of external auditory canal is rare, developing an adequate tumor staging system and treatment has been difficult. We present a case of SCC of external auditory canal in a 37-year-old male who presented with a 15-year history of the left ear purulent discharge, pain, 1-month history of vertigo, tinnitus, and facial weakness. Due to the extensive spread of his tumor into the middle year at the time of diagnosis, his tumor was deemed unresectable and he received palliative chemotherapy and planned for radiation therapy.

Key words: Squamous cell carcinoma, External auditory canal, Otitis media, Middle ear, Staging system

INTRODUCTION

Carcinoma arising in the external auditory canal and temporal bone is rare and comprises <0.2% of head-and-neck neoplasm with the annual incidence of 0.8–1/millions.[1-3] Squamous cell carcinoma (SCC) is the most common pathology which accounts for up to 90% of neoplasm of the temporal bone.[1] The median age of SCC of temporal bone and external ear canal is the seventh decade in various series published by Nyrop and Grontved, Leonetti *et al*. Gillespie *et al*., and Pensak *et al*.[4-7] with a reported median age of 63–69 years, although very rare Kinne and Wood reported the disease in a 23-year-old individual.[6] This is an aggressive disease with the prognosis dependent on the stage of the disease and the primary treatment. Other primary histological types of neoplasms arising in the external auditory canal and temporal bone include adenocarcinoma, adenoid cystic carcinoma, mucoepidermoid carcinoma, basal cell carcinoma, ceruminous carcinoma, and rhabdomyosarcoma. Chronic otorrhea and cholesteatoma of the external auditory canal and middle ear are associated risk factors.[7-10] The following is a rare case report of one such patient, 37 years old, who presented to our institution with complaints of otorrhea, pain, tinnitus, facial weakness, and histopathology was diagnosed as moderately differentiated SCC.

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CASE DESCRIPTION AND RESULTS

A 37-year-old man presented to the ENT department with a 15-year history of the left ear purulent discharge which was insidious in onset and gradually progressive in nature. Discharge was yellow in color, mucoid, continuous, non-blood tinged, foul-smelling with itching, pain around ear, left-sided headache, and left-sided hearing loss. Complaints did not respond to the treatment of otitis media. The patient described initial drainage of clear fluid which became serosanguinous over the past 3 months. The patient denied any history of smoking or alcohol abuse or trauma.

In the ear, nose, and throat (ENT) department, otoscopic examination of the left ear showed that the external

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auditory canal was edematous with purulent discharge and presence of granulation tissue. The patient was found to have decreased sensation over the left side of the face in the second and third trigeminal region but normal sensation over the right forehead.

Audiogram of the patient showed moderate to severe left ear conductive hearing loss (56.66 DB) and mild right ear conductive hearing loss (38.33 DB).

A high-resolution computed tomography (HRCT) scan of his left inner ear and temporal bone showed an ill-defined expansile homogeneously enhancing soft-tissue lesion involving entire middle ear cavity and external auditory canal with significant post-contrast enhancement extending laterally into the subcutaneous and retroauricular region causing soft-tissue swelling and widening of aditus, destruction of posteromedial and lateral wall of maxillary antrum, anterior and posterior wall of external auditory canal, bony facial canal, ear ossicles, and left scutum extending up to occipitomastoid suture joint. The left tympanic membrane is not visualized separately [Figure 1].

The histopathological examination done on the biopsy taken from the external auditory canal tissue showed a moderately differentiated SCC [Figures 2-5].

The patient had stage T4N0 disease based on the radiological imaging of the left ear which showed that tumor has penetrated through the left external auditory canal into the scutum and walls of the left facial canal, this was thought to be the cause of his facial paralysis.

The patient was evaluated in the ENT department and his tumor was found to be unresectable due to the extensive local invasion. The patient received induction chemotherapy consisting of carboplatin, paclitaxel, and cetuximab and is planned for palliative short-course radiation therapy. The patient was referred to Tata Memorial Hospital, Varanasi, for palliative care.

DISCUSSION

SCC of the temporal bone and external auditory canal is a rare tumor with a reported incidence of between 1 and 6 cases/million population/year.[1] It accounts for <0.2% of all tumors of the head and neck[8] but is the most common neoplasm in the external auditory canal.[1] This is a disease of elderly most commonly in the seventh decade of life.[3] In general, tobacco and alcohol use are the two most important risk factors associated with squamous cell cancers of the head and neck. The other risk factors are chronic dermatitis, cholesteatoma, history of irradiation, and occupation like radium dial painter.[9-13] The diagnosis of SCC of the temporal bone and external auditory canal is based on histological examination of tissue from the tumor of the ear.

Because SCC of the temporal bone and auditory canal is so rare, developing an adequate tumor staging system and treatment has been difficult. To date, there is no universally accepted staging system for cancers of the temporal bone. The University of Pittsburgh staging system for primary squamous cell cancer of the external auditory canal was proposed by Arriaga *et al.* in 1990 in an attempt to classify the disease before treatment.[15]

- T1 is tumor limited to the external auditory meatus without bone or soft-tissue extension.
- T2 is tumor with limited bone and soft-tissue extension.
- T3 is full-thickness external auditory meatus erosion, middle ear or mastoid extension, and facial nerve paralysis.
- T4 is tumor eroding the cochlea, carotid canal, jugular foramen, dura, petrous apex, or extensive (>0.5 cm) soft-tissue extension.

Although it has its limitations for determining soft-tissue extension of tumor, the development of a TNM staging system using pre-operative HRCT scans of the temporal bone has been confirmed by other studies to accurately reflect the extent of the disease and planning of tumor resection.[16] Gillespie *et al.* in 2001 published retrospective

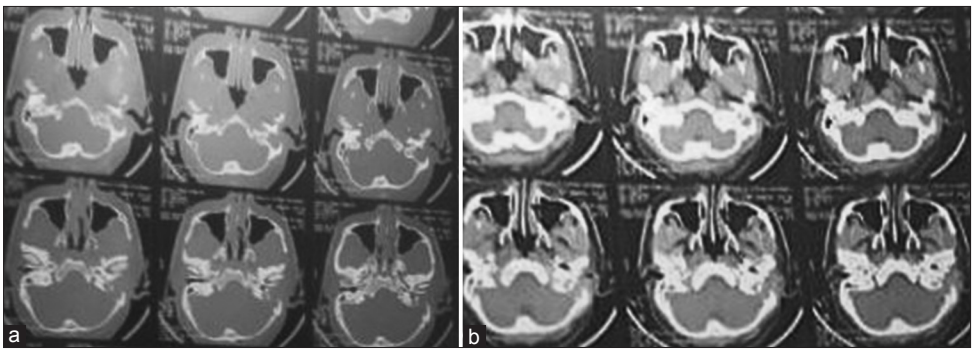

Figure 1: (a and b) Left inner ear and temporal bone computed tomography scan on the first admission showing opacification of the left external auditory canal, left tympanic, and epitympanic spaces, as well as the left mastoid antrum. There is also bony destruction of the anterior wall of the left external auditory canal, scutum, and wall of the left facial canal

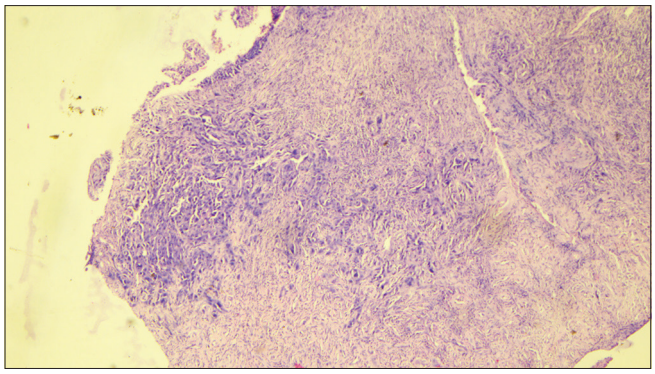

Figure 2: Scanner view of biopsy from the external auditory canal tissue (×10). Tumor is seen infiltrating the surrounding stroma

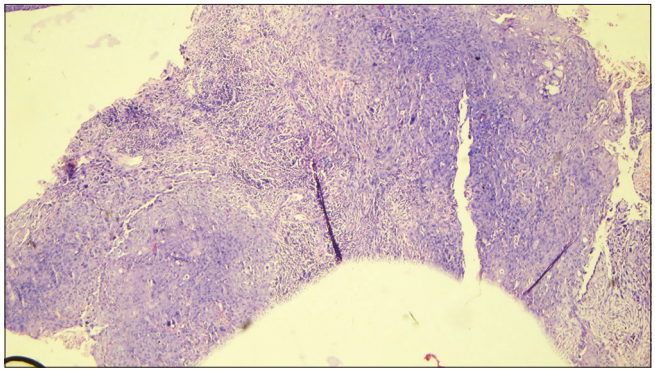

Figure 3: Low-power view showing tumor infiltrating the surrounding fibrocollagenous stroma (×10)

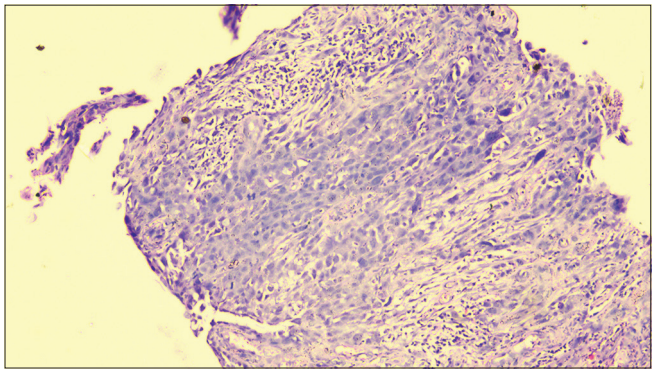

Figure 4: Microscopic view showing moderately differentiated squamous cell carcinoma, infiltrating the surrounding fibrocollagenous stromal tissue arranged in sheets (×20)

chart review of 15 patients treated for SCC and reported that the University of Pittsburgh staging system correlated with patient outcome and was more sensitive than the pre-operative radiological staging.[4]

The treatment of SCC of the external auditory canal depends on the staging of the tumor which includes lymph node metastasis and facial nerve involvement. The preferred treatments often consist of combination of *en bloc* surgical resection of the primary tumor with tumor-free surgical margins and post-operative chemotherapy and radiotherapy.[17,18] The surgery

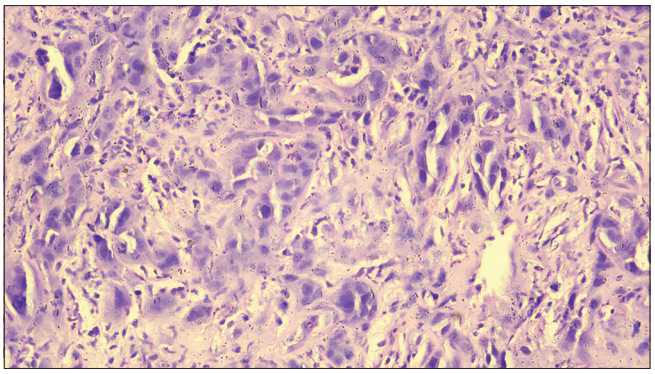

Figure 5: Microscopic view showing moderately pleomorphic squamous cells with hyperchromatic nucleus and moderate amount of cytoplasm (×40)

that is often performed is the lateral temporal bone resection or subtotal temporal bone resection.[17] Poor prognostic factors include the extent of the disease at presentation, positive margin, dural and cranial nerve involvement, and facial nerve paralysis. The overall 5-year survival rate of individuals with squamous cell cancer of the temporal bone ranges between 40% and 70% but can reach 20% in advanced-stage disease.[17]

CONCLUSION

SCC of the external ear canal and temporal canal is very rare, and their treatment depends on the stage of tumor. Early detection of the tumor before extensive spread into the middle ear allows for better treatment and better prognosis.

At presentation, this patient had only long history of purulent discharge and pain but on histopathology, it was diagnosed as moderately differentiated SCC of the external auditory canal and correlation with radiology confirmed that tumor had involvement of soft tissues and middle ear along with facial nerve involvement. T4-stage squamous cell cancer of external auditory canal has a very poor prognosis; the 2-year survival of T4 squamous cell cancer of the external auditory canal is reported to be between 0% and 7%. Due to the extensive spread of the tumor into the middle ear at the time of diagnosis, this patient's tumor was deemed unresectable and he received palliative chemotherapy and is planned for radiation therapy and was sent to tertiary care center for further evaluation and treatment.

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This case study has provided knowledge and better understanding of the disease spectrum and presentation

thus helping to diagnose and predict possibility of cancer in long-standing chronic otitis media.

I thank the patient for his support and permission to allow us to present it thus helping others to take advantage of the knowledge provided by the discussion in this case report.

REFERENCES

1. Available from: https://www.cancer.gov/cancertopics/factsheet/sites-types/head-and-neck.
2. Morton RP, Stell PM, Derrick PP. Epidemiology of cancer of the middle ear cleft. Cancer 1984;53:1612-7.
3. Yadav S, Gupta D, Yadav GS. Squamous cell carcinoma of the external auditory canal in young: A rare case report. Indian J Otol 2013;19:196-8.
4. Gillespie MB, Francis HW, Chee N, Eisele DW. Squamous cell carcinoma of the temporal bone: A radiographic-pathologic correlation. Arch Otolaryngol Head Neck Surg 2001;127:803-7.
5. Leonetti JP, Smith PG, Kletzker GR, Izquierdo R. Invasion patterns of advanced temporal bone malignancies. Otol Neurotol 1996;17:438-42.
6. Pensak ML, Gleich LL, Gluckman JL, Shumrick KA. Temporal bone carcinoma: Contemporary perspectives in the skull base surgical era. Laryngoscope 1996;106:1234-7.
7. Nyrop M, Grøntved A. Cancer of the external auditory canal. Arch Otolaryngol Head Neck Surg 2002;128:834-7.
8. Boamah H, Knight G, Taylor J, Palka K, Ballard B. Squamous cell carcinoma of the external auditory canal: A case report. Case Reports Otolaryngol 2011;2011:615210.
9. Coachman EH. Squamous cell carcinoma secondary to cholesteatoma. AMA Arch Otolaryngol 1951;54:187.
10. Beal DD, Lindsay JR, Ward PH. Radiation-induced carcinoma of the mastoid. Arch Otolaryngol 1965;81:9-16.
11. Ruben RJ, Thaler SU, Holzer N. Radiation induced carcinoma of the temporal bone. Laryngoscope 1977;87:1613-21.
12. Moody SA, Hirsch BE, Myers EN. Squamous cell carcinoma of the external auditory canal: An evaluation of a staging system. Am J Otol 2000;21:582-8.
13. Arriaga M, Curtin HD, Takahashi H, Kamerer DB. The role of preoperative CT scans in staging external auditory meatus carcinoma: Radiologic-pathologic correlation study. Otolaryngol Head Neck Surg 1991;105:6-11.
14. Chee G, Mok P, Sim R. Squamous cell carcinoma of the temporal bone: Diagnosis, treatment and prognosis. Singapore Med J 2000;41:441-6, 451.
15. Bridges MN, Doval M. Cutaneous squamous cell carcinoma of the external auditory canal. Dermatol Online J 2009;15:13.
16. Lewis JS. Cancer of the ear. CA Cancer J Clin 1987;37:78-87.
17. Lobo D, Llorente JL, Suárez C. Squamous cell carcinoma of the external auditory canal. Skull Base 2008;18:167-72.

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