RFP Journal of ENT and Allied Sciences
Volume 5 Number 1, January–June 2020

Carcinoma Temporal Bone

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How to cite this article:
Saurabh Varshney, Amit Kumar Tyagi, Amit Kumar et al., Carcinoma Temporal Bone. RFP J ENT Allied Sci 2020;5(1):29–32.

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Abstract

Temporal bone carcinoma is a rare entity. Incidence of Sqamaous Cell Carcinoma(SCC) of temporal bone is very less accounting as less than 6 cases per million per year which is 0.3% of all head and neck tumors. Temporal bone carcinoma is frequently misdiagnozed before surgery. Delay in treatment as a result of misdiagnosis has a poor prognosis. Five year disease specific survival is only 19% to 48%[1-3]. In this article we are reporting two cases of temporal bone carcinoma. In these cases High Resolution Computed Tomography (HRCT) and MRI findings revealed soft tissue density in external auditory canal with involvement of middle ear and mastoid area. The disease was in filtrating the surrounding bony substance which was ill defined, there was destruction of ear ossicles with limited erosion of facial canal wall. Both cases were initially misdiagnozed as chronic otitis media with extensive cholesteatoma which were later proved to be SCC temporal bone. Both cases underwent surgical resection with adequate marginsto eliminate the disease. HRCT reports were consistent with the intraoperative findings and post surgery histopathology reports. Patients underwent radiotherapy postoperative and followed up for average 6 months without recurrence.

Keywords: Temporal bone carcinoma; Head and neck cancers; Lateral temporal bone resection; Radiotherapy.

Introduction

Temporal bone carcinoma is very rare amongst all head and neck cancers.[1] These can be of various types. Squamous cell carcinoma of temporal bone is the most commonly occurring tumor. Other less frequently types are adenocarcinoma, adenocystic carcinoma, mucoepidermoid carcinoma, basal cell carcinoma, ceruminous carcinoma, and rhabdomayosarcoma. Associated risk factors includeprevious radiotherapy treatment and chronicsuppurative otitis media (CSOM) or cholesteatoma within external auditory canal and middle ear.[4-5] Evidence has emerged to suggest human papillomavirus (HPV) can be linked to a subset of this disease group.[6-7] The survival rate at

5 years is 27% with a high operative mortality rate of 5%[8]. The long-term prognosis of SCC temporal bone malignancies is correlated to the tumor stage, biology of the tumor and the initial treatment.

Case- 1

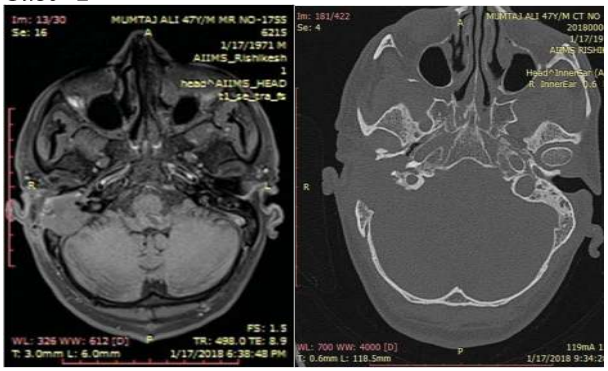
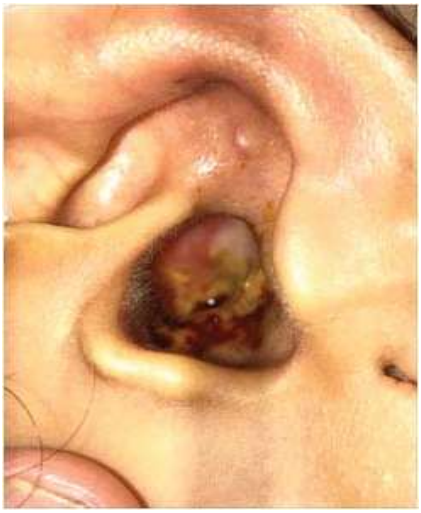


Fig. 1a. 1b.

A 47 year old male patient was admitted with chief complaints of bilateral ear discharge since childhood which was insidious in onset, initially mucoid later mucopurulent, non foul smelling, blood stained, which was unresponsive to the medications, with no aggravating factor. It was also associated with decreased hearing since 2 years, earache (recurrent) and headache since 6 months. There was also a history of mass in right ear since 1 month. It was a post operated case of Right Modified Radical Mastoidectomy done at a local hospital in 2017. Biopsy was taken at the same time on suspicion which later proved the tumor as moderately differentiated SCC temporal bone. On examination tragal cartilage prominence was absent. Pinna was protruding outwards. Postauricular region there was apostaural scar of previous surgery and mastoid region was erythematous, tender, with raised local temperature. In right external auditory canal a pink colored mass was seen, which was occluding whole of the canal, single, soft in consistency and having smooth appearance. On palpation it was non tender, sensitive to touch, probe could be passed all around and mass did not bleed on touch.Tuning fork tests showedrinne test bilateral negative, webers test lateralised to right, absolute bone conduction tests were reduced bilaterally . Facial nerve function was normal bilaterally. On neck examination no palpable lymph nodeswere there and other cranial nerve examination was normal. Audio metric evaluation showed mixed hearing loss of 50 dB in right ear and left ear mixed hearing lossof 40 dB. Preop HRCT and MRI temporal bone showed right external auditory canal soft tissue extending from aditus to antrum with destruction of ear osscicles, thinning of tegmen and bony defect on lateral aspect of temporal bone (Fig: 1a,1b). The choice of surgical approach was based on the extent of tumor determined via physical examination and imaging studies. Tumor was categorized as University of Pittsburgh (T4N0Mx) Stage 4.

A lateral temporal bone resection with superficial parotidectomy with cavity obliteration Cul de sac closure of the right mastoid was performed under general anesthesia. Revealing a defect in the lateral bony wall of the mastoid process. On further dissection it was seen that mastoid cavity was filled with tumor tissue, which bleed easily . The tumor tissue was confirmed as a squamous cell carcinoma during the subsequent frozensection pathology reports. The tumor had grown upwards destroying the mastoid and tympanic cavity and infiltrating the dura of the middle cranial fossa. It had also destroyed the bonystructure of the sigmoid sinus but had not infiltrated into soft tissues. Destruction of the anterior wall of the external auditory canal and the posterior wall of the tympanic cavity was also seen. But the facial nerve bony canal and labyrinth medial to the tumor were intact. Post operative histopathology reports were suggestive of moderately differentiated SCC temporal bone. Patient was in regular follow up in radiotherapy department after 2 weeks for intensity modulated radiotherapy (IMRT) (66 Gy at 2 Gy per fraction for four weeks).

A 53 year old female patient presented in otorhinolaryngology out patient department with complaints of discharge from left ear for 1.5 years

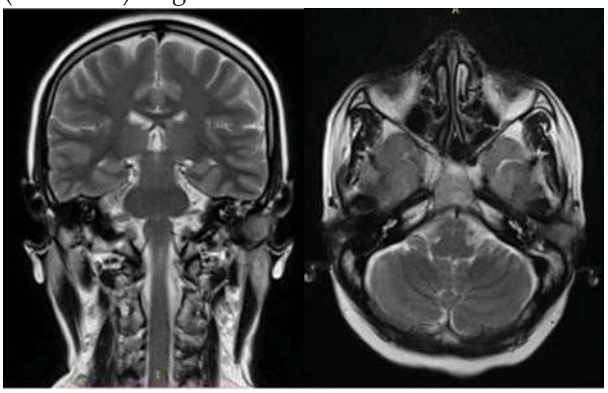


Case 2 –Fig 2

which was insidious in onset, mucopurulent, scanty, foul smelling, blood stained. There was pain in left infra auricular region for one year which was also associated with decreased hearing.

On otoscopic examination there was anir regular ulcero-proliferative growth involving the left

external auditory canal, firm in consistency, which did not bleed on touch (Fig 2). On tuning fork tests, rinne test was negative on left side and positive on right side, webers test was lateralized to left ear and absolute bone conduction tests were reduced on both sides. Bilateral facial nerve examination was normal. On neck examination there was no significant lymph nodes or abnormality seen. On pure tone audiometry there was mixed hearing loss of 50 dB in left ear and 40 dB in right ear. MRI of temporal bone showed soft tissue mass 1cm anterior, 1.5 cm posterior, 1cm superior and 1cm inferior-away from external opening of pinna. Mass engulfing the ossicles but the medial wall of middle ear free from the growth (Fig. 3a,3b). Biopsy was done at local hospital that reported moderately differentiated carcinoma of temporal bone. Tumor was categorized as University of Pittsburgh (T2N0Mx) stage 2.



Case 2 –Fig. 3a , 3b

A left lateral temporal bone resection with superficial parotidectomy was done under general anaesthesia, U shaped incision given from preauricular to postauricular, extending inferiorly to hyoid bone, excising the skin, superficial fascia and temporalis muscle. Circular incision with adequate margins from the tumor given in external auditory canal. Flaps elevated, cortical mastoidectomy done. Epitympanic dissection done upto temporomandibular joint. Extended facial recess approached isolating the facial nerve mastoid segment. Incudo-stapedial joint disarticulated. Tensor tympani tendon was cut. Facial recess extended and complete separation of specimen was done. Superficial parotidectomy done and branches of facial nerve were preserved. Fat and tensor fascia lata harvested from left anterolateral thigh. Eustachian tube opening obliterated using bone wax. Middle ear and mastoid cavity obliterated using fat, tensor fascia lata and temporalis muscle flap. Postoperative HPE documented well differentiated squamous cell carcinoma in the resected tumor, attached salivay gland showed normal morphology, four intraparotid lymph nodes showed feaures of reactive lymph node hyperplasia. Patient followed up in radiotherapy department for futher radiotherapy (60Gy at 2 Gy per fraction for four weeks) management after 2 weeks.

Discussion

SCC temporal bone are rare and have low incidence rates. Risk factors for SCC temporal bone are mostly unknown but few of the possible etiologies are chronic suppurative otitis media, cholesteatoma or previous radiotherapy exposure.

Approximately 75 % to 85 % of malignant tumors of temporal bone are secondary to CSOM.[9] As chronic inflammation of malignant tumors of middle ear mucosa may lead to metaplasia. In our experience both cases had history of CSOM.

Symptomatology of SCC temporal bone are mostly atypical. Most commonly presenting complaints in these casesare blood stained otorrhoea, mass in external auditory canal, decreased hearing and otolagia in affected ear. Further as tumor extends to middle ear, inner ear or petrousapex patient may presents with vestibulopathy, cranial nerve neuropathies in which facial nerve involvement is the most commonly encountered nerve.

As the presentation is obcure there are more chances of misdiagnosis hence causing the treatment delay. So, high suspicion of carcinoma temporal bone is necessary and should be kept in mind in all cases of CSOM. For confirmation of diagnosis tissue biopsy is necessary. If first tissue biopsy is negative and clinically external auditory canal mass is of high suspicion it is advisable to repeat biopsy in those cases.

In both of our cases tissue biopsy were found to be moderately differentiated SCC. HRCT and magnetic resonance imaging (MRI) should be done in all cases of diagnozed malignancy of temporal bone for staging the disease and determining the extent of surgical limits. HRCT would help in assessing the tumor invasion into bony structures and MRI would give details of tumor with dural and brain involvement. In one of our case tumor destroyed the mastoid and tympanic cavity infilterating dura of middle cranial fossa and sigmoid sinus. Other case had only limited involvement of external auditory canal and middle ear.

Surgery with postoperative radiotherapy is the main treatment approach in our both

cases of SCC temporal bone.[10] In one case with University of Pittsburgh (T4N0Mx) tumor stage 4, surgical approach was lateral temporal bone resection with superficial parotidectomy with mastoid and tympanic cavity obliteration and Cul de sac closure. In other case with university of Pittsburgh (T2N0Mx) stage 2 lateral temporal bone resection with superficial parotidectomy was done. Post surgery histopatological report confirmed moderately differentiated SCC temporal bone in both cases. Patients were followed up in radiotherapy department after 2 weeks for further management.

Conclusion

High index of suspicion is required for early diagnosis and treatment of SCC temporal bone which carries a better prognosis. Surgical treatment with lateral temporal bone resection with superficial parotidectomy followed by radiotherapy appears to be the best treatment modality.

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