Section: Radiation Oncology

Case Report

DEFINITIVE CHEMORADIOTHERAPY IN AN INOPERABLE CASE OF CARCINOMA EXTERNAL AUDITORY CANAL: A RARE CASE REPORT

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Received *: 20/05/2026*
Received in revised form *: 11/07/2026*
Accepted *: 27/07/2026*

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DOI:10.70034/ijmedph.2026.3.495

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2026; 16 (3); 3178-3180

ABSTRACT

Carcinoma of the external auditory canal (EAC) is an uncommon malignancy, accounting for less than 0.2% of all head and neck cancers, with squamous cell carcinoma (SCC) being the most prevalent histological subtype. Management of locally advanced and inoperable disease remains challenging due to anatomical constraints and proximity to critical structures. We report a case of a 47-year-old female diagnosed with locally advanced SCC of the left EAC with cervical lymphadenopathy and perineural spread, who was treated with definitive concurrent chemoradiotherapy (CRT). The patient achieved complete clinical and radiological response with good tolerance to treatment and remains disease-free at 15 months follow-up. This case highlights the potential role of CRT as an effective organ-preserving modality in selected patients with inoperable EAC carcinoma.

Keywords: External auditory canal, squamous cell carcinoma, chemoradiotherapy, perineural spread, rare tumor.

INTRODUCTION

Carcinoma of the external auditory canal is a rare malignancy with an estimated incidence of approximately one per million population and accounts for nearly 0. 2% of all head and neck cancers.[1] Among histological variants, squamous cell carcinoma is the most common, followed by basal cell carcinoma, adenoid cystic carcinoma, and adenocarcinoma.[2] Patients typically present with nonspecific otological symptoms such as chronic ear discharge, otalgia, hearing loss, bleeding, and occasionally facial nerve palsy. These symptoms often mimic benign conditions like chronic otitis media, leading to delayed diagnosis and advanced stage at presentation.[3] The standard treatment for early and resectable disease is surgical resection, often involving lateral or subtotal temporal bone resection, followed by adjuvant radiotherapy in high-risk cases.[4] However, for locally advanced, unresectable, or medically inoperable tumors, definitive chemoradiotherapy has emerged as an alternative treatment approach. Here, we present a case of locally advanced, inoperable carcinoma of the EAC successfully managed with definitive concurrent CRT, demonstrating excellent clinical and radiological response.

CASE REPORT

A 47-year-old female presented with complaints of foul-smelling purulent discharge from the left ear, decreased hearing, tinnitus, pain, deviation of mouth to the left side, and intermittent bleeding episodes over several months. On clinical examination, Rinne's test was negative and Weber's test lateralized to the left ear. Facial asymmetry suggested involvement of the facial nerve. Histopathological examination confirmed moderately differentiated squamous cell carcinoma. The patient had a good performance status with an ECOG score of 1. Contrast-enhanced MRI of the temporal bone revealed a soft tissue lesion measuring approximately 3 × 1. 5 × 1. 9 cm involving the left external auditory canal with erosion of the anterior wall, floor, and mastoid

region. There was involvement of the adjacent styloid process and destruction of the lower facial canal with enhancement along the facial nerve, suggestive of perineural spread. Multiple cervical lymph nodes at level II and III were noted, the largest measuring 12. 5 × 12 mm. No distant metastasis was detected. Given the locally advanced and inoperable nature of the disease along with preserved performance status, the patient was planned for radical concurrent chemoradiotherapy. She received external beam radiotherapy using VMAT technique to a total dose of 66 Gy in 33 fractions over 6. 5 weeks, along with weekly cisplatin-based chemotherapy (50 mg per cycle) for five cycles. Treatment was well tolerated with manageable acute toxicities. Post-treatment evaluation with contrast-enhanced MRI at 3 months demonstrated complete resolution of the lesion with no residual disease, showing only post-radiation changes. The patient remains disease-free at 15 months follow-up.

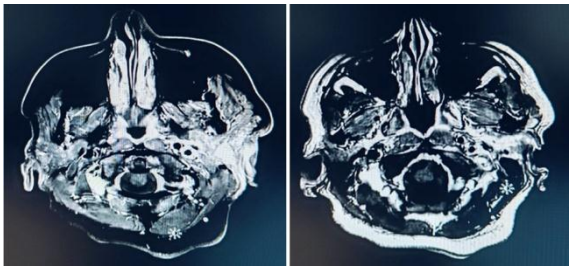

Figure 1: CEMRI ear showing soft tissue mass m/s ~ 3 x 1. 5x 1. 9 cm in the left EAC with erosion of anterior wall, floor, antero - inferior mastoid and adjacent styloid process

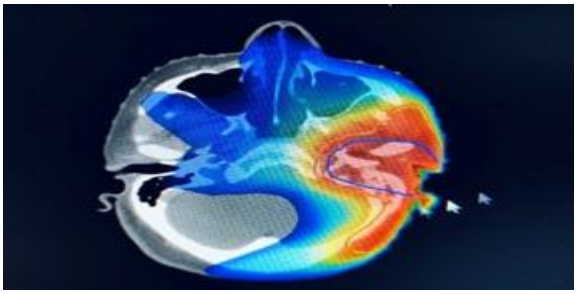

Figure 3: RT plan showing isododose distribution

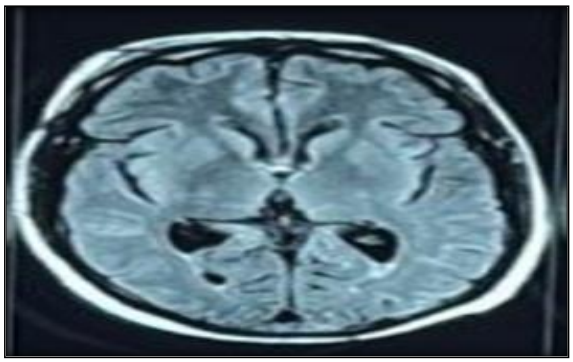

Figure 4: Post- treatment CEMRI inner ear was s/o no obvious mass leasion in the EAC along with post radiotherapy changes

DISCUSSION

Carcinoma of the external auditory canal is a rare and aggressive malignancy with limited prospective data guiding management strategies. Due to its rarity, most available evidence is derived from retrospective studies and institutional experiences.[1,5] Surgical resection (en bloc resection) followed by postoperative radiotherapy remains the standard of care for resectable disease. However, in locally advanced tumors with skull base involvement, extensive bone destruction, or perineural invasion, as seen in the present case where complete surgical resection may not be feasible or may lead to significant morbidity.[4,6]Perineural invasion is a well-recognized adverse prognostic factor associated with increased risk of local recurrence and poorer survival outcomes.[6] Its presence often necessitates more aggressive treatment strategies and may limit surgical options. In such scenarios, definitive radiotherapy with or without concurrent chemotherapy has emerged as a viable alternative. The addition of chemotherapy, particularly cisplatin, enhances radiosensitivity and improves locoregional control by potentiating DNA damage in tumor cells.[5,7] Several retrospective studies and meta-analyses have demonstrated the efficacy of definitive chemoradiotherapy in advanced EAC carcinoma. Takenaka et al. reported improved survival outcomes with concurrent CRT, with 5-year survival rates ranging from 40% to 45% in advanced cases.[5] Similarly, Katano et al. showed that radiotherapy-based approaches could achieve meaningful disease control in unresectabletumors.[4] Advanced radiation techniques such as IMRT and VMAT allow precise dose delivery while sparing adjacent critical structures like the brainstem, cochlea, and parotid glands, thereby reducing treatment-related toxicity.[7] In the present case, VMAT facilitated optimal target coverage and organ preservation. The excellent response observed in this patient, with complete clinical and radiological remission and sustained disease-free survival, underscores the potential of definitive CRT as an effective organ-preserving treatment modality. It also highlights that even in the presence of adverse features such as perineuralspread, aggressive nonsurgical management can yield favorable outcomes. Recent literature increasingly supports individualized treatment planning, where CRT plays a central role in unresectable or borderline operable disease.[8]

CONCLUSION

Definitive concurrent chemoradiotherapy represents an effective and organ-preserving treatment option in patients with locally advanced and inoperable carcinoma of the external auditory canal. This case reinforces the growing evidence supporting CRT as

a viable alternative to surgery in selected patients, even in the presence of high-risk features such as perineural invasion. Early diagnosis and timely initiation of aggressive multimodality treatment remain critical to improving outcomes in this rare malignancy.

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