ONLINE VERSION: ISSN 1028-4818

RPNS-1853

Multimed 2025; 29:e3167

Clinical case

Glomus jugulotympanicus. Case presentation

Jugulotympanic glomus tumor. Case Report

Jugulotympanic glomus. Case report

Maira Verena Guerrero Aguilar1* https://orcid.org/0000-0002-5585-3532

Idalmis Valeta Santana 1 https://orcid.org/0000-0002-0153-4376

Liz Daniela Díaz Granado 1 https://orcid.org/0009-0004-2661-2539

[1] University of Medical Sciences of Granma. Carlos Manuel de Céspedes Provincial General Hospital. Bayamo. Granma, Cuba.

* Corresponding author. E-mail:mayraverena59@gmail.com

Summary

Introduction Glomus jugulotympanic tumors, or paragangliomas, represent a small number of head and neck tumors. Their slow growth and progressive symptoms often lead to delayed diagnosis.

Aim: describe the clinical, imaging and therapeutic observations of a patient diagnosed with a glomus jugulotympanicum tumor.

Case presentation

A 55-year-old female patient was seen in 2023 at the Otolaryngology service in Bayamo for right ear pain. Otoscopy diagnosed acute otitis media, and she was prescribed medication. She improved clinically and remained under follow-up care. Six months later, she was

ONLINE VERSION: ISSN 1028-4818

RPNS-1853

evaluated for persistent nasal obstruction, difficulty swallowing, and tinnitus in the right ear. Audiological studies (tympanometry and audiometry) diagnosed Eustachian tube obstruction. She was followed in outpatient care in early 2024. During digital otoscopy, a wine-red image was observed in the posteroinferior portion of the tympanic membrane, raising suspicion of a vascular tumor. A non-contrast and contrast-enhanced computed tomography scan of the middle ear and mastoid air cells was performed, revealing a tumor in the jugular foramen penetrating the tympanic cavity at its base.

Conclusions The presence of a jugulotympanic tumor in the right ear is confirmed by contrast tomography and treatment with stereostatic radiosurgery is assigned.

Keywords: Paraganglioma; Jugular glomus; Tympanic glomus.

Abstract

Introduction: Jugulotympanic glomus tumors, or paragangliomas, represent a small proportion of head and neck tumors. Their slow growth and progressive symptoms often delay diagnosis.

Objective: To describe the clinical, imaging, and therapeutic findings of a patient diagnosed with a jugulotympanic glomus tumor.

Case report: A 55-year-old female patient was evaluated in 2023 at the Otolaryngology service in Bayamo due to right ear pain. Otoscopy revealed acute otitis media, medical treatment was prescribed, and the patient improved clinically and remained under follow-up. Six months later, she was reassessed due to persistent nasal obstruction, discomfort during swallowing, and noise in the right ear. Audiological studies (tympanometry and audiometry) indicated tubal obstruction. During follow-up in early 2024, a digital otoscopy revealed a wine-red image in the posteroinferior portion of the tympanic membrane, raising suspicion of a vascular tumor. Simple and contrast-enhanced computed tomography of the middle ear and mastoid cells showed a tumor image in the jugular foramen extending into the tympanic cavity through its base.

ONLINE VERSION: ISSN 1028-4818

RPNS-1853

Conclusions: Contrast-enhanced CT confirmed the presence of a jugulotympanic tumor in the right ear, and stereotactic radiosurgery was indicated as treatment.

Keywords: Paraganglioma; Jugular glomus; Tympanic glomus.

Summary

Introduction: Jugulotympanic glomus tumors, or paragangliomas, represent a small proportion of both head and neck tumors. Its slow growth and progressive symptoms often delay diagnosis.

Aim: to reveal the clinical, imaging and therapeutic features of a patient with a diagnosis of jugulotympanic glomus tumor.

Case report: female patient, 55 years old, attended in 2023, no Otorhinolaryngology service in Bayamo due to non-direct delivery. An otoscopy revealed acute medial otite; Medical treatment was prescribed, the clinic was better and maintained in accompaniment. Six months later, she was reassessed due to persistent nasal obstruction, swallowing discomfort, and non-direct noise. Audiological studies (tympanometry and audiometry) diagnose tubal obstruction. In no follow-up, at the beginning of 2024, a digital otoscopy showed a reddish-brown image in the postero-inferior portion of the tympanic membrane, raising the suspicion of vascular tumor. Simple and contrast-enhanced computed tomography of the medium of mastoid cells will show a tumor image in the jugular foramen that extends to the tympanic cavity at its base.

Conclusions: A contrast-enhanced tomography confirmed the presence of a jugulotympanic tumor that was not detected directly, and treatment with stereotaxic radiosurgery was indicated.

Key words: Paraganglioma; jugular glomus; Tympanic glomus.

Received: 10/04/2025

ONLINE VERSION: ISSN 1028-4818

RPNS-1853

Approved: 8/12/2025

Introduction

Glomus jugulotympanicus tumors, or paragangliomas, are highly vascularized benign tumors that arise from paraganglion cells located in the adventitial wall of the jugular bulb, within the jugular foramen of the temporal bone at the base of the skull. (1) The incidence of glomus jugularis has been estimated at between one and three per 100,000 people, representing a small number of head and neck tumors (0.5%). Their slow growth and progressive symptoms often lead to delayed diagnosis. (1)

Paragangliomas are the most common benign tumors of the temporal bone. Although their histology reveals a benign nature, they are locally aggressive with a tendency to grow at the expense of surrounding structures, and in 1-3% of cases they may undergo malignant transformation. They are more frequent in women than in men (8:1) and most commonly occur between 50 and 70 years of age. (2)

The most common symptoms are pulsatile tinnitus and conductive hearing loss. Other auditory signs and symptoms include a feeling of fullness in the ear, otorrhea, bleeding, a murmur, and the formation of a mass in the middle ear. Vertigo and sensorineural hearing loss result from involvement of the inner ear. To determine the cure rate of these tumors after radiosurgery, follow-up of approximately ten years will be required. (3)

Glomus jugulare predominantly affects middle-aged women, (4,5) and is the second most common paraganglioma of the head and neck; they range in size from a few millimeters to more than ten centimeters. (6) These tumors can be found in the carotid body, vagus nerve, middle ear, tympanic nerve, glossopharyngeal nerve branch (Jacobson's nerve), auricular branch of the vagus nerve (Arnold's nerve), and jugular foramen. (2)

Because it is a rare tumor, difficult to diagnose, the objective is to describe the clinical, imaging and therapeutic observations of a patient diagnosed with a glomus

jugulotympanicum tumor, which will allow them to improve the understanding, prevention, diagnosis and treatment, as well as the care and follow-up of these patients.

Clinical case presentation

A 55-year-old female patient with a personal history of allergic rhinitis, under follow-up since October 2023, was seen in the outpatient clinic of the Otolaryngology service of the Carlos Manuel de Céspedes Provincial General Hospital in Bayamo, with a history of pain in the right ear and whitish nasal secretions.

An otolaryngological examination was performed, and otoscopy confirmed acute right otitis media. Medical treatment was prescribed with nasal drops, antihistamines, and antibiotics for 10 days, followed by 3 months of continued drops and antihistamines. Clinical improvement was observed, and the patient was monitored. Tympanometry, stapedial reflex testing, and audiometry were performed 6 months later. The results showed Eustachian tube obstruction and an absent stapedial reflex in the right ear, with mild conductive hearing loss of 30 dB (March 14, 2024).

One month after this last examination was performed, a simple computed axial tomography (CAT) scan of the middle ear and mastoid cells was carried out with normal results.

In July 2024, the patient began reporting a pulsating noise in her right ear, nasal obstruction, discomfort, and difficulty swallowing. A right digital otoscopy (Image 1) revealed a wine-red image in the posteroinferior portion of the tympanic membrane, raising suspicion of a vascular tumor.

ONLINE VERSION: ISSN 1028-4818
RPNS-1853

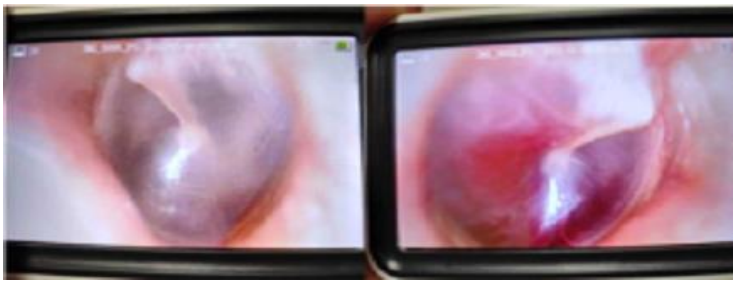

Image 1. Left ear (normal). Right ear (glomus).

In the simple CT scan of the middle ear and mastoid cells performed in August 2024, a small isodense image measuring 35 x 18 mm is seen in the mid-cranial base (right tympanic base), occupying the jugular foramen and penetrating through the ipsilateral tympanic base box with possible relation to a paraganglioma of the jugular foramen.

The case was evaluated at the Hermanos Almeijeiras Clinical Surgical Hospital in Havana (February 2025) where a contrast CT scan of the middle ear and mastoid was performed, which showed a poorly defined, hypervascularized, soft tissue attenuation mass in the right middle ear, measuring approximately 16 x 18 mm, extending to the hypotympanum without touching the jugular bulb. There is associated bone erosion that does not affect the ossicular chain. All of the above relates to a possible right jugulotympanic paraganglioma (Image 2).

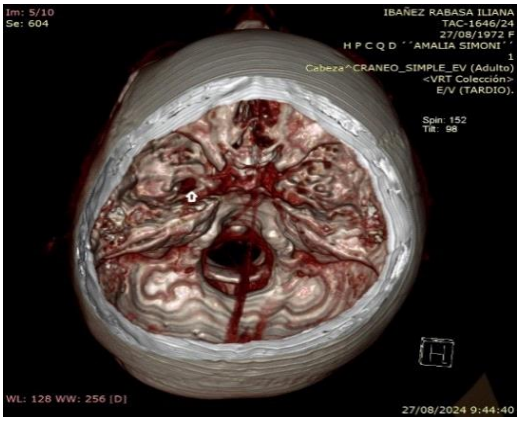

Image 2. Contrast-enhanced CT scan of the skull, middle ear, and mastoid. Sagittal view. Mass with

soft tissue attenuation, hypervascularized, 16 x 18 mm.

The patient underwent 25 sessions of stereotactic radiosurgery at the National Institute of Oncology and Radiotherapy. She completed the oncological radiotherapy treatment in July 2025 with satisfactory progress and complete absence of the lesion; she is followed up every three months at the Institute of Oncology in Havana.

Discussion

Recognizing the clinical presentation, which frequently includes unilateral hearing loss, pulsatile tinnitus, and cranial nerve involvement, can help raise suspicion of glomus tumor. Various diagnostic methods and new treatment options are available. (1) However, in this case, magnetic resonance imaging could not be performed to further the diagnosis, which is a limitation of this study.

The authors of this case presentation agree with Kubes et al., (7) who state that imaging studies are vital for diagnosis and for evaluating therapeutic options. CT scans are especially valuable for their ability to precisely delineate bone involvement in temporal paragangliomas (PGs).

Due to its location and significant vascularization, open surgery is sometimes very risky, and therapeutic procedures that reduce complications and mortality in these patients are sought. Authors Jazmín Reyes-Carmona and colleagues (8) present a case in which surgical resection was not possible due to the size of the mass and its involvement of important structures; therefore, arteriography was used as both a diagnostic and curative method.

These tumors frequently occur at the end of life, around 60 to 70 years of age, but can appear at any age, and their cause is unknown, as in the case of a 31-year-old patient with a similar evolution to the study presented in this article by the aforementioned authors. (8)

Cases of glomus tympani tumors are generally treated surgically. However, glomus jugulare (GJT) tumors are located on the lateral aspect of the skull base and therefore present a significant surgical challenge. Given the risk of cranial neuropathy with surgery, radiotherapy is preferable. (9,10)

The cancer-specific treatment received by the patient in the presented case was stereotactic radiosurgery, a protocol used in Cuba at the National Institute of Oncoradiology to treat tumors of this size and location. According to Torres Cuevas, et al., (11) of the Hermanos Ameijeiras Clinical Surgical Hospital, Havana, Cuba, clinical practice guidelines for head and neck paragangliomas suggest that embolization should be considered for each individual case, taking into account the level of interventional vascular radiology service and other aspects related to the lesion, such as dimensions, location, and proximity to cranial nerves—issues that were considered in this case.

Authors such as Aria Shakeri and collaborators, (6) present a similar case in which after treatment with stereotactic radiosurgery, the cessation of growth is shown, with a decrease in tumor size between stable and minimal in the maximum transaxial dimension.

Glomus jugulare tumors continue to pose a significant surgical challenge due to their slow growth and often large size at diagnosis. (6)

Conclusions

Head and neck glomus tumors are rare neuroendocrine tumors that pose a difficult decision due to their location and their potential for malignant transformation; this was demonstrated in the case analyzed, which delayed its diagnosis for two years; however, it received the effective and protocolized treatment modality for this type of tumor.

ONLINE VERSION: ISSN 1028-4818

RPNS-1853

Bibliographic references

1. Pacheco López S, Peña Navarro P, Almeida Ayerve CN, Marcos Alonso S, Ferreira Cendón S, Calvo Pérez M. Surgical approach to carotid glomus tumor: a clinical case. Rev ORL [Internet]. 2023 [cited 2025 Nov 21]; 13(S2): 101-3. Available from:https://revistas.usal.es/cinco/index.php/2444-7986/article/view/29013/29215

2. Reyes Burneo PM, Rammal Rammal A. Benign tumors of the middle ear: Paragangliomas, glomus tumors, or chemodectomas of the temporal bone. Indexia [Internet]. 2022 [cited 2025 Nov 21]; 2022(6): 7-13. Available from:https://revistaindexia.com/wp-content/uploads/2022/04/Tumores-benignos-del-oido-medio-Paragangliomas-tumores-glomicos-o-quemodectomas-del-hueso-temporal.pdf

3. Dessai SN, Pereira S, Priyanand V, Prabhu R. A Rare Case Report on Bilateral Glomus Jugulare. Internat J Scientc Research [Internet]. 2023 [cited 11/21/2025]; 12(7): 83– 4. Available athttps://www.worldwidejournals.com/international-journal-of-scientific-research-(IJSR)/fileview/a-rare-case-report-on-bilateral-glomus-jugulare_July_2023_4916385689_8602943.pdf

4. Ong V, Bourcier AJ, Florence TJ, Mozaffari K, Mekonnen M, Sheppard JP, et al. Stereotactic Radiosurgery for Glomus Jugulare Tumors: Systematic Review and Meta-Analysis. World Neurosurg [Internet]. 2022 [cited 12/9/2025]; 162: e49-e57.doi: 10.1016/j.wneu.2022.02.043.

5. Kalhoro A, Hashim ASM. Glomus jugulare tumors treatment by gamma knife radiosurgery: A single center study. Pak J Med Sci [Internet]. 2023 [cited 12/9/2025]; 39(1): 46-49.doi: 10.12669/pjms.39.1.6590.

6. Shakeri A, Portanova A, Sakano H, Singh DP. Glomus jugulotympanicum tumor treated with radiation therapy: A case report with review of literature. J Clin Imaging Sci [Internet]. 2024 [cited 11/21/2025]; 14(14): 1-4. Available in:https://pmc.ncbi.nlm.nih.gov/articles/PMC11152541/pdf/JCIS-14-14.pdf

7. Kubeš J, Vondráček V, Andrlik M, Navrátil M, Sláviková S, Klika D, et al. Pencil-beam

scanning proton therapy for the treatment of glomus jugulare tumors. J Med Radiat Sci. [Internet]. 2022 [cited 11/21/2025]; 69(4): 456-62. Available in:https://pmc.ncbi.nlm.nih.gov/articles/PMC9714513/pdf/JMRS-69-456.pdf

8. Reyes Carmona J, Salazar Olmedo D, Vargas Román A. Glomus jugulotympanic tumor: a case report. Acta méd. costarric [Internet]. 2020 [cited 2025 Dec 02]; 62(1): 43-6. Available from:https://www.scielo.sa.cr/pdf/amc/v62n1/0001-6002-amc-62-01-43.pdf.

9. Ehret F, Kufeld M, Fürweger C, Haidenberger A, Schichor C, Lehrke R, et al. Image-guided robotic radiosurgery for glomus jugulare tumors-Multicenter experience and review of the literature. Head Neck. [Internet]. 2021 [cited 12/02/2025]; 43(1): 35-47. Available in:https://pubmed.ncbi.nlm.nih.gov/32851752/

10. Brendan WVivek M, Na J, De Gregorio A, Pater L, Muthana TO,et al. Targeted palliative endovascular embolization of a glomus jugulotympanicum tumor for refractory Jacobson's neuralgia: A case report. Surgical neurology international [Internet]. 2024 [cited 12/02/2025]; 15: 433. Available in:https://pubmed.ncbi.nlm.nih.gov/39640353/

11. Torres Cuevas BL, Castillo Lara GE, Machirán Suárez R, Gutierrez Pedroso MA, Álvarez Martínez M. Endovascular treatment of jugulotympanic paraganglioma. Rev Cubana Otorrinolaringol Cirug Cabeza Cuello [Internet]. 2022 [cited 2025 Dec 8]; 6(1): e299. Available from:https://revotorrino.sld.cu/index.php/otl/article/view/299/456

Conflict of interest

The authors declare no conflicts of interest.

Authorship contribution

Maira Verena Guerrero Aguilar: Conception, study design, data acquisition and interpretation, critical analysis, and intellectual contribution. She prepared the first draft and obtained final approval of the manuscript.

Idalmis Valeta Santana: Prepared the first draft, the critical analysis and the intellectual contribution, in addition to the final approval of the manuscript.

Liz Daniela Díaz Granado: participated in data curation, formal analysis, research, and manuscript writing.

Patient consent statement

The authors certify that they have obtained all the corresponding patient consent forms. In said form, the patient has given her consent for her images and other clinical information to be published in the journal.