

# Recurrent Glomus Jugulare Tumor Invading the Cerebellum on <sup>68</sup>Ga-DOTATATE PET/CT

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**Abstract:** Glomus tumors are rare, slow-growing extra-adrenal paragangliomas of the head and neck. Treatment and prevention of neurological deficits become more difficult as these tumors aggressively grow in size and infiltrate adjacent anatomical structures. Because glomus tumors are paragangliomas of neuroendocrine origin, <sup>68</sup>Ga-DOTATATE PET/CT can be used as imaging method in the diagnosis and follow-up. In this case, we presented a recurrent glomus jugulare tumor that invaded to the cerebellum on <sup>68</sup>Ga-DOTATATE PET/CT imaging.

**Key Words:** glomus jugulare, paraganglioma, DOTATATE, PET/CT, recurrent

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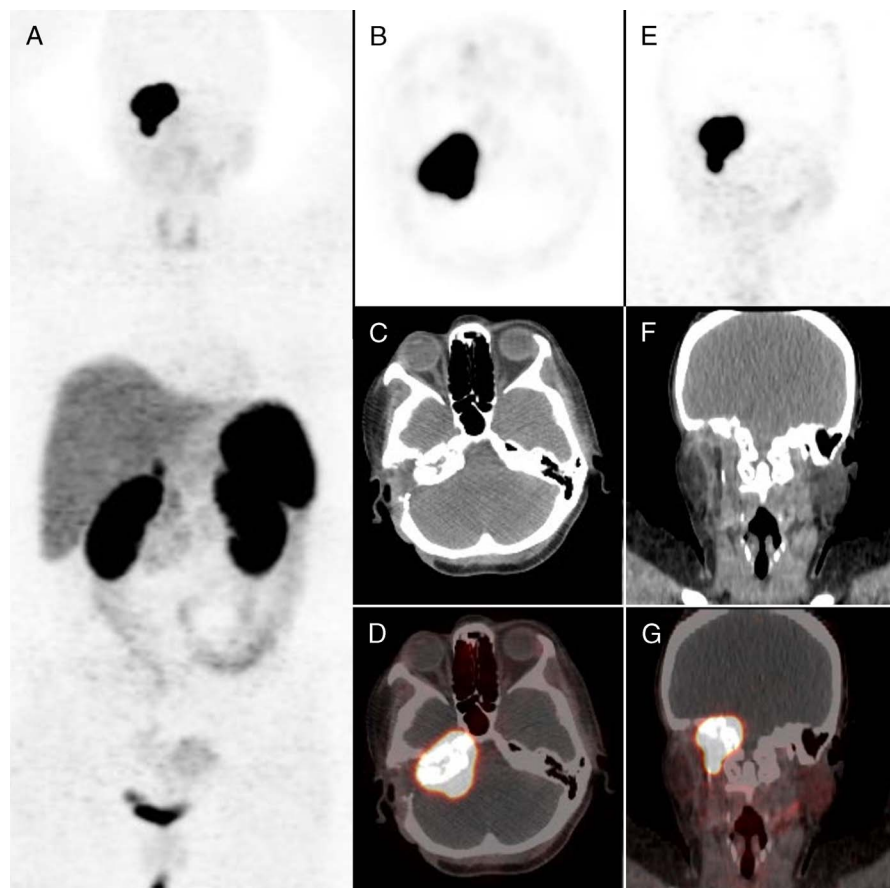
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**FIGURE 1.** A 50-year-old woman with a history of recurrent glomus jugulare tumor and treated 3 times by the gamma knife and somatostatin therapy was admitted to the neurology clinic with progressively worsening headache and hearing loss. Routine blood tests and physical examination were unremarkable. Brain MRI showed a lesion compatible with a right glomus jugulare tumor in the right temporal bone.  $^{68}\text{Ga}$ -DOTATATE PET/CT examination was performed to evaluate the extent of the disease.  $^{68}\text{Ga}$ -DOTATATE PET/CT demonstrated an intense tracer accumulation in the lesion that localized medial to the mastoid cells in the right temporal bone (A, MIP image; B, PET image; C, CT image; and D, PET/CT image) and extend inferiorly along the jugular vein (E, PET image; F, CT image; and G, PET/CT image).  $^{68}\text{Ga}$ -DOTATATE PET/CT also revealed invasion of the lesion to the cerebellum. Glomus tumors are rare extra-adrenal paragangliomas that originate from the paraganglionic bodies of the primary chemoreceptor tissue. Glomus tumors can be located in the carotid bifurcation, ganglion nodosum, the cervical part of the vagal nerve, the jugular bulb (glomus jugulare), and the middle ear cavity (glomus tympanicum).<sup>1</sup> Glomus tumors usually do not show symptoms until the lesions reach a large volume. Patients usually present with swallowing difficulty, hearing loss, shoulder droop, pulsing and ringing one ear, headaches, and high blood pressure.<sup>2</sup> Glomus jugulare tumors are scarcely detected as recurrent disease during follow-up, and associated with metastatic spread in 1% to 5% of all cases.<sup>3</sup> Although the best imaging method for imaging head and neck paragangliomas is digital subtraction angiography, imaging with  $^{123}\text{I}$ -MIBG scintigraphy can be used for whole-body screening in metastatic or familial paraganglioma. However,  $^{123}\text{I}$ -MIBG scintigraphy has a low sensitivity for such tumors, due to head and neck paragangliomas do not produce catecholamines.<sup>4</sup>  $^{68}\text{Ga}$ -DOTATATE PET/CT can also be used in the diagnosis and follow-up owing to better resolution.<sup>5</sup> Recurrent glomus jugulare tumors are rare and difficult to treat. As these tumors progress, they increase in size aggressively and infiltrate adjacent anatomical structures.<sup>6</sup> The goal of treatment for these tumors is to prevent uncontrolled growth and neurological deficits.<sup>7-9</sup> Therefore,  $^{68}\text{Ga}$ -DOTATATE PET/CT has an important role in the evaluation of the extent of the disease. Although  $^{68}\text{Ga}$ -DOTATATE PET/CT finding of glomus jugulare tumors have rarely been reported in the literature, a case of recurrent glomus jugulare tumor on  $^{68}\text{Ga}$ -DOTATATE PET/CT has not been reported yet. In this case, we demonstrate a recurrent glomus jugulare tumor that invaded to the cerebellum on  $^{68}\text{Ga}$ -DOTATATE PET/CT imaging.