Glomus jugulare tumor

Tumors of the glomus jugulare are benign, slow-growing paragangliomas.

There remains a subgroup of complex tumors–multiple, giant, malignant, neuropeptide-secreting lesions, and those treated previously by an intervention with an adverse outcome–that is high risk, presents surgical challenges, and is associated with treatment controversy.

Giant glomus jugulare tumors with a large posterior fossa extension are considered either inoperable or at least requiring of a two-stage operation. Likewise, the surgical approach and treatment for chondrosarcomas of the temporal bone are controversial.

Al-Mefty et al., describe a combined approach in which, with the aid of microsurgical and laser techniques, such tumors can be removed in one stage. The surgical approach involves a lateral infratemporal approach combined with a posterior fossa craniectomy. This technique was used in five glomus jugulare tumors.

There were no deaths, and surgical morbidity consisted of weakness in the facial nerve and gastrointestinal hemorrhage and respiratory distress syndrome in one patient [1].

The intrabulbar dissection technique can be used with any tumor, as long as the tumor itself has not penetrated the wall of the jugular bulb or infiltrated the cranial nerves. Tumors that hypersecrete catecholamine require perioperative management and malignant tumors carry a poor prognosis [2].

Radiosurgery

Thirty-eight patients treated with SRS between 2000 and 2015 in the Wake Forest University Baptist Medical Center, Winston-Salem, North Carolina

The tumor volumes on pre- and posttreatment imaging were compared utilizing the Leskell GammaPlan treatment plan software to assess tumor progression. Pre- and posttreatment symptoms, Fisch classification, and complications were recorded.

The mean radiographic follow-up was 39.1 months. The mean dose-to-tumor margin was 13.2 Gy. The mean tumor size at treatment was 5.8 and 5.2 cm at last follow-up. Thirty-three patients had follow-up imaging suitable for analysis. When defining both 10 and 15% tumor size increases as significant, 27 (82%) and 29 (88%) tumors decreased in size or remained stable, respectively. For the seven tumors with documented pre-SRS growth, treatment success was 86%. The mean marginal dose for treatment success and failure were 13.2 and 13.7 Gy, respectively. Patients receiving a higher margin dose had a greater risk of tumor progression ($p = 0.0277$). Fisch classification did not impact tumor progression rate. Initial tumor volume had no significance on tumor response to SRS.

SRS is an effective treatment option for GJT. Both initial tumor volume and Fisch classification did not impact tumor progression. There were no significant patient or lesion characteristics that distinguished treatment success and/or failure [3].

1)
Al-Mefty O, Fox JL, Rifai A, Smith RR. A combined infratemporal and posterior fossa approach for the removal of giant glomus tumors and chondrosarcomas. Surg Neurol. 1987 Dec;28(6):423-31. PubMed PMID: 2825368.

2)
Al-Mefty O, Teixeira A. Complex tumors of the glomus jugulare: criteria, treatment, and outcome. J Neurosurg. 2002 Dec;97(6):1356-66. PubMed PMID: 12507134.
3)
Winford TW, Dorton LH, Browne JD, Chan MD, Tatter SB, Oliver ER. Stereotactic Radiosurgical Treatment of Glomus Jugulare Tumors. Otol Neurotol. 2017 Jan 24. doi: 10.1097/MAO.0000000000001336. [Epub ahead of print] PubMed PMID: 28121969.