Temozolomide for Invasive pituitary neuroendocrine tumor

Current treatment guidelines are not standardized but combines surgical resection, radiation therapy, and chemotherapy. Temozolomide is the only chemotherapeutic agent with documented effectiveness and is recommended for APA in European Society of Endocrinology clinical guidelines [1].

Temozolomide has shown a notable advancement in pituitary tumor treatment with a remarkable improvement rate in the 5-year overall survival and 5-year progression-free survival in both aggressive pituitary neuroendocrine tumors and pituitary carcinomas [2].

Till 2012, 46 cases of adenohypophysial tumors that were treated with temozolomide, including 30 adenomas and 16 carcinomas, have been reported. Eighteen of the 30 (60%) adenomas and 11 of the 16 (69%) carcinomas responded favorably to treatment. One patient with multiple endocrine neoplasia type 1 and an aggressive prolactin-producing adenoma was also treated and demonstrated a good response. No significant complications have been attributed to temozolomide therapy. Thus, temozolomide is an effective treatment for the majority of aggressive adenomas and carcinomas. Evidence indicates that there is an inverse correlation between levels of O6-methylguanine-DNA methyltransferase immunoexpression and therapeutic response. Alternatively, high-level O6-methylguanine-DNA methyltransferase immunoexpression correlates with an unfavorable response. Here, we review the use of temozolomide for treating pituitary neoplasms [3]

A 39-year-old male diagnosed with an invasive silent somatotroph pituitary macroadenoma were treated with temozolomide after surgery [4].

References

1)
Shah S, Manzoor S, Rothman Y, Hagen M, Pater L, Golnik K, Mahammedi A, Lin AL, Bhabhra R, Forbes JA, Sengupta S. Complete Response of a Patient With a Mismatch Repair Deficient Aggressive pituitary neuroendocrine tumor to Immune Checkpoint Inhibitor Therapy: A Case Report. Neurosurgery. 2022 May 13. doi: 10.1227/neu.0000000000002024. Epub ahead of print. PMID: 35544035.
2)
Syro LV, Rotondo F, Camargo M, Ortiz LD, Serna CA, Kovacs K. Temozolomide and Pituitary Tumors: Current Understanding, Unresolved Issues, and Future Directions. Front Endocrinol (Lausanne). 2018 Jun 15;9:318. doi: 10.3389/fendo.2018.00318. PMID: 29963012; PMCID: PMC6013558.
3)
Ortiz LD, Syro LV, Scheithauer BW, Rotondo F, Uribe H, Fadul CE, Horvath E, Kovacs K. Temozolomide in aggressive pituitary neuroendocrine tumors and carcinomas. Clinics (Sao Paulo). 2012;67 Suppl 1(Suppl 1):119-23. doi: 10.6061/clinics/2012(sup01)20. PMID: 22584716; PMCID: PMC3328813.
4)
Ghazi AA, Rotondo F, Kovacs K, Amirbaigloo A, Syro LV, Fathalla H, Di Ieva A, Cusimano MD.

Treatment of Invasive Silent Somatotroph pituitary neuroendocrine tumor with Temozolomide. Report of a Case and Review of the Literature. Endocr Pathol. 2015 Feb 26. [Epub ahead of print] PubMed PMID: 25716461.