Somatostatin analogs in meningioma

Meningiomas are associated with several sex hormones-related risk factors and demonstrate a predominance in females. These associations led to investigations of the role that hormones may have on meningioma growth and development. While it is now accepted that most meningiomas express progesterone and somatostatin receptors, the conclusion for other receptors has been less definitive.

Miyagishima et al. performed a review of what is known regarding the relationship between hormones and meningiomas in the published literature. Furthermore, they reviewed clinical trials related to hormonal agents in meningiomas using MEDLINE PubMed, Scopus, and the NIH clinical trials database.

They identified that all steroid-hormone trials lacked receptor identification or positive receptor status in the majority of patients. In contrast, four out of five studies involving somatostatin analogs used positive receptor status as part of the inclusion criteria.

Several clinical trials have recently been completed or are now underway using somatostatin analogs in combination with other therapies that appear promising, but a reevaluation of hormone-based monotherapy is warranted. Synthesizing this evidence, they clarified the remaining questions and present future directions for the study of the biological role and therapeutic potential of hormones in meningioma and discuss how the stratification of patients using features such as grade, receptor status, and somatic mutations, might be used for future trials to select patients most likely to benefit from specific therapies [1)]

Jensen et al. performed an individual patient data (IPD) meta-analysis. Main outcomes were toxicity, best radiological response, progression-free survival, and overall survival. They applied multivariable logistic regression models to estimate the effect of SSA on the probability of obtaining radiological disease control. The predictive performance was evaluated using area under the curve and Brier scores. They included 16 studies and compiled IPD from 8/9 of all previous cohorts. Quality of evidence was overall ranked “very low.” Stable disease was reported in 58% of patients as best radiological response. Per 100 mg increase in total SSA dosage, the odds ratios for obtaining radiological disease control was 1.42 (1.11 to 1.81, P = 0.005) and 1.44 (1.00 to 2.08, P = 0.05) for patients treated with SSA as monodrug therapy vs SSA in combination with everolimus, respectively. Low quality of evidence impeded exact quantification of treatment efficacy, and the association between response and treatment may represent reverse causality. Yet, the SSA treatment was well tolerated, and beneficial effect cannot be disqualified. A prospective trial without bias from inconsistency in study designs is warranted to assess somatostatin analog therapy for well-defined meningioma subgroups [2)].

Case series

Between January 1996 and December 2010, 13 patients harboring a progressive residual meningioma (as indicated by MR imaging criteria) following operative therapy were treated with a monthly injection of the SST analog octreotide (Sandostatin LAR [long-acting repeatable] 30 mg, Novartis). Eight of 13 patients had a meningioma of the skull base and were analyzed in the present study.

Postoperative tumor enlargement was documented in all patients on MR images obtained before the initiation of SST therapy. All tumors were benign. No patient received radiation or chemotherapy before treatment with SST. The growth of residual tumor was monitored by MR imaging every 12 months.

Results: Three of the 8 patients had undergone surgical treatment once; 3, 2 times; and 2, 3 times. The mean time after the last meningioma operation (before starting SST treatment) and tumor enlargement as indicated by MR imaging criteria was 24 months. A total of 643 monthly cycles of Sandostatin LAR were administered. Five of the 8 patients were on SST continuously and stabilized disease was documented on MR images obtained in these patients during treatment (median 115 months, range 48-180 months). Three of the 8 patients interrupted treatment: after 60 months in 1 case because of tumor progression, after 36 months in 1 case because of side effects, and after 36 months in 1 case because the health insurance company denied cost absorption.

Conclusions: Although no case of tumor regression was detected on MR imaging, the study results indicated that SST analogs can arrest the progression of unresectable or recurrent benign meningiomas of the skull base in some patients. It remains to be determined whether a controlled prospective clinical trial would be useful [3].

1)
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