Synchronous

Existing or occurring at the same time.

Cerebellopontine Angle Synchronous Tumor

Synchronous or metachronous growth of multiple tumors (≥ 2) is found in up to 20% of meningioma patients. However, biological as well as histological features and prognosis are largely unexplored. Clinical and histological characteristics were retrospectively investigated in 95 patients harboring 226 multiple meningiomas (MMs) and compared with 135 cases of singular meningiomas (SM) using uni- and multivariate analyses. In MM, tumors occurred synchronously and metachronously in 62% and 38%, respectively. WHO grade was intra-individually constant in all but two MMs, and histological subtype varied in 13% of grade 1 tumors. MM occurred more commonly inconvexity meningioma/parasagittal locations, while SM were more frequent at the skull base ($p < .001$). In univariate analyses, gross total resection ($p = .014$) and high-grade histology in MM were associated with a prolonged time to progression ($p < .001$). Most clinical characteristics and rates of high-grade histology were similar in both groups ($p \geq .05$, each). Multivariate analyses showed synchronous/metachronous meningioma growth (HR 4.50, 95% CI 2.26-8.96; $p < .001$) as an independent predictor for progression. Compared to SM, risk of progression was similar in cases with two (HR 1.56, 95% CI .76-3.19; $p = .224$), but exponentially raised in patients with 3-4 (HR 3.25, 1.22-1.62; $p = .018$) and ≥ 5 tumors (HR 13.80, 4.06-46.96; $p < .001$). Clinical and histological characteristics and risk factors for progression do not relevantly differ between SM and MM. Although largely constant, histology and WHO grade occasionally intra-individually vary in MM. A distinctly higher risk of disease progression in MM as compared to SM might reflect different underlying molecular alterations [1)].

1)
Kopf L, Warneke N, Grauer O, Thomas C, Hess K, Schwake M, Mannil M, Akkurt BH, Paulus W, Stummer W, Brokinkel B, Spille DC. Prognosis and histology of sporadic synchronous and metachronous meningiomas and comparative analyses with singular lesions. Neurosurg Rev. 2023 Feb 13;46(1):55. doi: 10.1007/s10143-023-01958-w. PMID: 36781550; PMCID: PMC9925510.