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Incidence of intracranial meningioma in patients with family history of solid organ malignancy

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Objective: To know the incidence of intracranial meningioma in patients with family history of solid organ malignancy.

Methodology: Study was a randomized control trial conducted at Punjab Institute of Neurosciences (PINS)/Lahore General Hospital (LGH)/Postgraduate Medical Institute (PGMI) from January 2015 to July 2016 incident intracranial meningioma. A total of 170 patients, both genders, with age range of 18-52 were enrolled that were equally divided into cases and controls based upon family history of presence of solid organ malignancy (cases) and without any family history of malignancy (control). A trained senior postgraduate resident neurosurgeon and a house officer were given identical standardized and structured history forms to take a proper history from the enrolled cases and controls and their histories were matched in order to countercheck by the registrar individuals with a prior history of a brain or nervous system tumor were excluded. Controls were selected from individuals admitted to the study hospitals during the same time period who were diagnosed with nonmalignant conditions and were matched to meningioma cases on age, sex, race, profession and residence so that the distribution of these variables would be. Calculations for ORs and 95% Confidence Intervals (CIs) were performed to estimate the relative risk of meningioma among persons who reported the occurrence of a solid organ malignancy in a relative, compared without using conditional logistic regression. Adjustment for the matching variables race/ethnicity, sex and age and excluded respondents who could not provide information about first-degree relatives.

Results: Relatively few studies have examined meningioma risk in relation to family history of cancer. We conducted a hospital-based case-control study in patients with meningioma cases (n=85) were identified at three regional referral hospitals from January 2015 to July 2016. Controls (n=85) admitted to the same hospitals for nonmalignant conditions were frequency-matched on age, sex, race/ethnicity, hospital and proximity of residence to hospital. Participants were questioned elaborately through thorough history taking in with special emphasis on any family member who has/had cancer. Odds Ratios (ORs) were calculated to estimate the risk of meningioma associated with family history of cancer. Participants with family history of any solid organ tumor (n=57, mean=0.67, SD=19.79, OR=2.03; confidence interval 95% CI, 3.5-4.8). Shared environmental or genetic factors in families may influence risk. Our findings suggest that individuals with a family history of solid organ cancers may have an increased risk for meningioma. Proper history was taken using standardized history form from two different doctors, a junior house officer and a senior medical officer to countercheck the accuracy.

Conclusion: From our study we concluded that the incidence of intracranial meningioma is highest in people with a family history of solid organ malignancy. Such patients should be recorded and counseled. A thorough history regarding any systemic signs/symptoms and examination of the patient should be performed in order to rule out presence of systemic malignancy in the subject. This study emphasizes a high level of suspicion of meningioma in patients with signs/symptoms suggestive of intracranial mass lesion with history of familial history of solid organ malignancy.

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