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The Relationship between Parkinson Disease and Brain Tumor: A Meta-Analysis.

Ye R¹, Shen T¹, Jiang Y¹, Xu L¹, Si X¹, Zhang B¹.

Author information

Abstract

OBJECTIVE: Epidemiological studies have investigated the association between Parkinson disease (PD) occurrence and the risk of brain tumors, while the results remain controversial. We performed a meta-analysis to clarify the exact relationship between PD and brain tumors.

METHODS: A systematic literature search was conducted using PubMed, Embase, ScienceDirect and CBM (China Biology Medicine Disc) before February 2016. Eligible studies were those that reported risk estimates of brain tumors among patients with PD or vice versa. A random-effects model was used to calculate the pooled odds ratio (OR) of the outcomes. Subgroup analyses and sensitivity analysis were conducted to explore the potential sources of heterogeneity.

RESULTS: In total, eight studies involving 329,276 participants met our inclusion criteria. The pooled OR was 1.51 (95%CI 1.21-1.89), indicating that PD carried a higher risk of brain tumor. Analyses by temporal relationship found that the occurrence of brain tumor was significantly higher after the diagnosis of PD (OR 1.55, 95% CI 1.18-2.05), but not statistically significant before PD diagnosis (OR 1.21, 95%CI 0.93-1.58). Subgroup analysis showed that gender differences, ethnicity differences and the characteristic of the tumor (benign or malignant) did not make much change in the association between brain tumor and PD.

CONCLUSIONS: Our meta-analysis collecting epidemiological studies suggested a positive association of PD with brain tumors, while the influence of anti-parkinson drugs and ascertainment bias could not be excluded. Further studies with larger sample size and more strict inclusion criteria should be conducted in the future.

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