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Brain cancer and pesticide relationship in orchard farmers of Kashmir.

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Abstract

BACKGROUND: The increasing trend in the incidence of primary malignant brain tumors in orchard farmers and their families in Kashmir.

AIM: To determine the relationship between the patients of primary malignant brain tumors and their occupation.

MATERIALS AND METHODS: Retrospectively, case files along with death certificates of 432 patients of primary malignant brain tumors and 457 controls (non-tumor neurologic diseases), admitted for treatment simultaneously over a period of 4 years from January 2005 to December 2008, to the Neurosurgery, Sher-i-Kashmir Institute of Medical Sciences (SKIMS), Kashmir, were studied. Follow-up and family interaction was established.

RESULTS: Analysis revealed that 90.04% (389 out of 432) patients were orchard farm workers, orchard residents and orchard playing children exposed to the high levels of multiple types of neurotoxic and carcinogenic (chlorpyriphos, dimethoate, mancozeb and captan) chemicals for more than 10 years [relative risk (RR) = 10.6; odds ratio (OR) = >10; 95% confidence interval (CI) = >25-40]. The 9.96% (43 out of 432) patients were not exposed to pesticides. On the other hand, only 19 patients out of 457 controls had recorded history of pesticide exposure and 438 were unrelated to pesticides. Out of 389 patients, 71.7% (279 out of 389) were males and 28.3% (110 out of 389), including six members of three families, were females (one male child).

CONCLUSION: All orchard-related 389 patients had high-grade tumors as compared to the non-pesticide tumors. Mortality in pesticide-exposed tumors was 12%. The higher or upper-normal levels of serum cholinesterase (AChE) were observed in 54.7% (213 out of 389) patients and decreased levels were found in only 45.3% (176 out of 389) orchard-related patients (RR = 19.4; OR = >5; 95% CI = >1-10). Although serum AChE levels were a routine investigation in malignant brain tumors, this was not a routine in other neurological conditions (hospitalized controls). The familial gliomas have shown an emerging trend in the orchard residents of valley of Kashmir.

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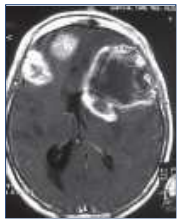



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