

Antiemetic Properties of the Antiepileptic Drug Levetiracetam

TO THE EDITOR: Chemotherapy-induced nausea and vomiting is an important problem in patients with brain tumors. Because of the high prevalence of seizures, most patients are given antiepileptic drugs. Motivated by a case report,¹ we investigated whether levetiracetam can suppress chemotherapy-induced nausea and vomiting.

We retrospectively evaluated 161 patients with glioblastoma who had undergone radiation therapy and started adjuvant chemotherapy; 66 patients were taking levetiracetam and 95 were not (for all numerical data, see Table 1 in the Supplementary Appendix, available with the full text of this letter at www.nejm.org). In a univariate analysis, use of levetiracetam and older age were associated with reduced chemotherapy-induced nausea and vomiting ($P < 0.05$ for both comparisons). Nausea and vomiting were less common among patients taking levetiracetam than among patients who were not taking any antiepileptic drugs ($P = 0.006$). This finding remained robust when we performed multivariate logistic-regression modeling to adjust for known risk factors for chemotherapy-induced nausea and vomiting (younger age, female sex, dexamethasone use, and chemotherapy type).²

The mechanism through which levetiracetam exerts antiemetic effects is unknown. The mechanism of action of levetiracetam is distinct from that of other antiepileptic drugs, its main functional binding site in the brain being synaptic

vesicle glycoprotein 2A (SV2A), which is ubiquitous in the brain.³ Because of its effectiveness against seizures, its tolerability, and the absence of an interaction with chemotherapeutic drugs, levetiracetam is routinely used as a first-line agent in patients with brain tumors.⁴ We report that this drug is also associated with less nausea and vomiting in patients with glioblastoma who are undergoing chemotherapy, an unexpected beneficial effect of levetiracetam.

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Dr. Lee reports receiving a Young Investigator Award from UCB Pharma; Dr. Bromfield, consulting and lecture fees from Abbott Laboratories and grant support from UCB Pharma; and Dr. Kesari, consulting fees from Bristol-Myers Squibb, lecture fees from Enzon, and grant support from Adnexus. No other potential conflict of interest relevant to this letter was reported.

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