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Anti-epileptic drugs induced secondary osteoporosis: Multi-factorial mechanisms and current status

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Long term association exists between antiepileptic drug (AED) therapy and bone diseases. There is a lattice of the pathophysiological mechanisms of AED-induced bone disease that can be either independent or dependent on each other. Hepatic induction of cytochrome P₄₅₀ leading to increased metabolism of vitamin D is the principle mechanism reported. Others include secondary hyperparathyroidism, calcitonin or vitamin K deficiency, deprived estrogen levels etc. A better understanding of these mechanisms can aid clinicians in identifying and monitoring vulnerable patients and in defining the optimal therapy for all affected patients. Bisphosphonates, a standard form of treatment for post-menopausal osteoporosis, are potent inhibitors of bone resorption and given the findings of increased bone resorption associated with AEDs, may represent an effective treatment for bone disease in patients receiving AEDs. Similarly, raloxifene, a selective estrogen receptor modulator, may be a potential therapeutic option in view of the fact that AEDs causes estrogen deficiency. Thus, studies were designed to investigate the effect of anti-osteoporotic therapies, in comparison with CVD supplementation, on AEDs-induced bony alterations in mice. Further, the effect of these therapies on seizures and on the antiepileptic efficacy of AEDs was investigated. Our results suggest a potential for bisphosphonates and raloxifene in the management of PHT and/or SVP-induced bone disease and thus merits further investigation to provide an evidenced-based approach for their use. Further, with the newer AEDs gaining importance, our future experiments would focus on comparing them with the conventional AEDs and to examine their impact on multiple aspects of bone health.

Biography

Divya Vohora, MPharm, PhD, is currently Professor for Department of Pharmacology and in-charge of Pharmaceutical Medicine program, Faculty of Pharmacy and Assistant Dean Students Welfare at Hamdard University, New Delhi. She has more than 15 years of teaching/research experience with 82 publications (including 2 books, 5 book chapters and 75 research papers in reputed national and international journals). She is a member of many learned societies, professional bodies, expert committees and on Editorial Board and reviewer for more than 30 reputed journals.

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