

LETTERS

Misconception about the cause of vitamin D toxicity

In the case reported by Auguste and colleagues,¹ we believe that the patient experienced vitamin D intoxication because of an underlying pathologic condition that the authors failed to recognize.

The authors incorrectly concluded that a dose of 8000–12 000 IU daily can result in vitamin D intoxication. Vitamin D toxicity generally occurs when the level of 25-hydroxyvitamin D is greater than 375 nmol/L (150 ng/mL).² This patient had a 25-hydroxyvitamin D level of 241 nmol/L (96 ng/mL). This concentration is considered to be within the normal limit (30–100 ng/mL) according to the Endocrine Society's clinical practice guideline.³ Daily ingestion of 10 000 IU of vitamin D₃ raising blood levels of 25-hydroxyvitamin D above 100 ng/mL was not associated with hypercalcemia, as reported in a review.² Population studies have also reported that doses of up to 20 000 IU daily were not associated with toxicity.²

Levels of 1,25-dihydroxyvitamin D₃ are not increased in patients with vitamin D intoxication with hypercalcemia, because of the suppression of parathyroid hormone reducing renal conversion of 25-hydroxyvitamin D to 1,25-dihydroxyvitamin D.^{2,3} The high levels of 1,25-dihydroxyvitamin D₃, and the fact that the authors observed that treatment with hydroxychloroquine resulted in a rapid decline in circulating levels of

1,25-dihydroxyvitamin D₃, should have alerted the authors that the likely explanation was the unregulated extrarenal conversion of 25-hydroxyvitamin D to 1,25-dihydroxyvitamin D. The renal 25-hydroxyvitamin D 1 α -hydroxylase (CYP27B1) is not sensitive to hydroxychloroquine, ketoconazole or glucocorticoids as suggested by the authors. Only the extrarenal CYP27B1 is sensitive to these medications.⁴

The authors made a modest effort with imaging studies to rule out granulomatous disorders. However, they did not appreciate the patient's previous history of urothelial carcinoma, which has been reported to be associated with vitamin D toxicity associated with unregulated extrarenal conversion of 25-hydroxyvitamin D to 1,25-dihydroxyvitamin D. This was the likely cause of the patient's vitamin D intoxication and renal failure, not the dosage of vitamin D.⁵

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