

Individual oral vitamin D loading regimen for optimal serum values

Jean-Pierre Rothen, Jonas Rutishauser, Philipp Walter, Kurt E. Hersberger, Isabelle Arnet.

Background An adequate supply of vitamin D is difficult to achieve during winter period in temperate latitudes. Serum values <25 nmol/l indicate deficiency, 25-50 nmol/l insufficiency, >50 nmol/l sufficiency, and >75 nmol/l optimal values. Supplementation can be administered daily or weekly or monthly with cumulative doses.

Purpose To investigate the pertinence of an individually calculated loading regimen of vitamin D for the achievement of optimal serum values >75 nmol/l.

Method Interventional, randomized, 3-arm study in ambulatory patients with vitamin D insufficiency who received 24,000 IU vitamin D monthly during three months, as drinking solution or as newly developed capsule, or as weekly loading regimen. The loading regimen consists of an individual number of weeks with the intake of a 24,000 IU vitamin D capsule weekly, calculated with a formula including baseline vitamin D serum value and body weight. Main inclusion criteria were age ≥18 years and vitamin D serum value <50 nmol/l. Primary outcome was increase of vitamin D serum level, secondary outcomes were patient's preferences and adverse events.

Findings A total of 58 outpatients were recruited, six dropped out. Patients' characteristics did not differ between the three groups. Sufficient vitamin D serum values >50 nmol/l were reached in both groups taking 24,000 IU cholecalciferol monthly during 3 months by 94% patients taking the drinking solution by 65% patients taking the capsules, and in all patients taking the loading regimen. Optimal serum vitamin D values >75 nmol/l were observed in two patients from both monthly regimen groups, and in 58% patients taking the loading regimen. No patient achieved a serum value in the toxic range, and no vitamin D related adverse effect occurred. Capsules were preferred by 88.5% of the patients.

Conclusion The results show the benefit of an individual loading regimen of 24,000 IU weekly to achieve optimal serum levels compared to the monthly administration of the same dose. General practitioners should take into account patient's preference for medication formulation when prescribing a vitamin D medication.