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Urology. 2016 Jan;87:40-5. doi: 10.1016/j.urology.2015.10.009. Epub 2015 Oct 19.

## Idiopathic Calcium Nephrolithiasis and Hypovitaminosis D: A Case-control Study.

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### Abstract

**OBJECTIVE:** To investigate the association between vitamin D deficiency (25-hydroxyvitamin D <20 ng/mL) and idiopathic calcium nephrolithiasis (ICN).

**METHODS:** A total of 884 patients with ICN (363 males, mean age of 51 ± 14) and 967 controls (162 males, mean age of 59 ± 15) from an area with no food fortification policy were considered following a case-control study design. Patients were enrolled at a third-level outpatient stone clinic. Controls were selected from a laboratory database after exclusion of those with nephrolithiasis, bone, endocrine, liver, and kidney diseases. Serum 25-hydroxyvitamin-D (25-OH-D), date of test, presence/history of diabetes, and cardiovascular disease including hypertension were recorded for all subjects. Serum parathormone, calcium, phosphorus, and urinary factors of lithogenic risk were available in stone formers (SF). After univariate statistical analysis, propensity score matching with conditional logistic regression was used to control for the possible effects of covariates.

**RESULTS:** The prevalence of 25-OH-D <20 ng/mL was 56% in SF and 44% in controls (P <.001), with median levels of 18 ng/mL [interquartile range (IQR) of 12-24] versus 23 ng/mL (IQR of 14-30) (age and sex adjusted P <.001). After a fully adjusted conditional logistic regression analysis, performed on propensity-matched cohorts (442 SF, 442 controls), there was a statistically significant association between vitamin D deficiency and odds of nephrolithiasis (estimated odds ratio of 2.29, confidence interval 95% 1.74-3.02, P <.001). 25-OH-D levels were not different in hypercalciuric and normocalciuric SF (median and IQR of 18 ng/mL and 13-23 vs 19 ng/mL and 13-26, respectively, P = .2).

**CONCLUSIONS:** SF have lower serum 25-OH-D levels than controls. The role of hypovitaminosis D in the onset of ICN should be better reconsidered.

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PMID: 26494294 DOI: [10.1016/j.urology.2015.10.009](https://doi.org/10.1016/j.urology.2015.10.009)

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