Prospective Comparision of Vitamin D Levels in Young Adults with and without Distal Radius Fracture

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Objectives

The optimum vitamin D levels in young adults is controversial. We sought to compare serum levels of 25-hydroxyvitamin D in young adults who sustained a low energy distal radius fracture to healthy individuals without a history of fracture and to define any correlation between fracture severity and vitamin D levels.

Methods

A single-center, prospective study was performed. Study subjects were aged 18-45 years and sustained a low energy distal radius fracture. Control subjects were age-gender matched. Vitamin-D deficiency was classified by the Institute of Medicine guidelines. Fracture severity was classified with the AO/ASIF system and correlated to vitamin-D level via Spearman coefficients.

Vitamin D Deficiency in Patients with and without Distal Radius Fractures

Vitamin D Classification*	Vitamin D level (ng/mL)	No Fracture n=67		Fracture n=15		p value
Deficiency	<12	25.3%	n=17	13.3%	n=2	0.5011
Insufficiency	12-20	22.3%	n=15	46.6%	n=7	0.1027
Adequate	>20	52.2%	n=35	40.0%	n=6	0.5690

* Based on the recommended values provided by the Institute of Medicine

Spearman Correlation Coefficients Related to Fracture Severity

	Vitamin D level (ng/mL)	p value	Age (years)	p value
AO Fracture Classification	-0.33	0.24	-0.42	0.12

Results

Fifteen distal radius fractures and sixty-seven healthy controls met inclusion criteria. The overall range of 25-hydroxyvitamin-D level was 7.0-50.2 ng/mL, and the average measurement was 22.4 ng/mL in the control group and 21.4 ng/mL in the study group (p=0.97). In patients who sustained a distal radius fracture, vitamin-D levels were categorized as: deficient in 13.3%, insufficient in 46.6%, and adequate in 40.0%. No significant correlations were found between fracture severity and vitamin-D level.

Conclusion

Vitamin-D levels in both study arms were in the low to normal range, but not significantly different. Additional supplementation in an otherwise healthy, young population appears unlikely to affect the occurrence of these fractures.

**The authors have no relevant disclosures relating to this study