Vitamin D Deficiency May Explain the Possible Link Between Gout and Erectile Dysfunction

To the Editor:

Two articles recently published in the *Journal of Rheumatology* have explored a possible relationship between gout and erectile dysfunction. In the cross-sectional study conducted by Schlesinger, *et al*[1], a significantly greater proportion of patients with gout (63.76%) had erectile dysfunction (ED) versus patients without gout (60.51%). The association remained significant after adjustment for age, hypertension, diabetes, and obesity (adjusted OR 2.92, 95% CI 1.41–6.06). Chen, *et al*[2] reported similar results using a nationwide cohort study design in Taiwan. The gout cohort exhibited a 1.21-fold adjusted HR of subsequent ED development compared with the non-gout cohort (95% CI 1.03–1.44). This causal study also demonstrated that patients with a different number of comorbidities exhibited a dose-response effect of ED development compared to the non-gout participants with no comorbidity.

As numerous investigators have noted, the main mechanisms underlying the association between ED and gout include endothelial dysfunction, oxidative stress, and inflammation induced by elevated serum uric acid, and the comorbidities associated with gout that are connected with similar risks of vascular diseases[3]. In addition to this, gout *per se* is a source of stress for affected individuals; this would directly cause the development of ED.

Another explanation of the link between ED and gout might be vitamin D deficiency (VDD). Since 1993, attention has focused on the association between 1,25(OH)2D3 and elevated serum uric acid. It was reported that uric acid could suppress the synthesis of 1,25(OH)2D3 in patients with renal failure and hyperuricemia[4], and the serum active vitamin D levels were inversely related to the serum uric acid level[5]. In patients with gout, the serum 1,25(OH)2D3 concentration but not 25(OH)D3 was significantly lower than that in the healthy male subjects[6]. Based upon these observations, Chen, *et al*[7] found that hyperuricemia in an experimental rat model could suppress 1-α hydroxylase through nuclear factor-κB signaling, which leads to lower serum 1,25(OH)2D3.

Does VDD contribute to ED? Sorenson and colleagues concluded that VDD contributes to ED because VDD is one of several factors that associates with increased cardiovascular disease (CVD)[8]. CVD and ED share many of the same risk factors, and VDD is closely associated with both disorders. To test this hypothesis, Barassi, *et al*[9] evaluated the status of serum vitamin D in a group of patients with arteriogenic, borderline, or nonarteriogenic ED. Their study shows that a significant proportion of patients with ED have VDD and that this condition is more frequent in patients with the arteriogenic etiology[9]. However, to our knowledge no interventional studies have assessed the beneficial effect of vitamin D supplementation in male subjects with ED and/or gout.

We emphasize the pivotal role of VDD in the pathogenesis of gout and ED. It would have been interesting if Schlesinger and Chen and their colleagues had measured the concentration of serum 1,25(OH)2D3 and 25(OH)D3. If proven by future studies that VDD is a risk factor for ED and gout, then men with gout and/or ED should be routinely screened for VDD. For the patients with low levels of vitamin D, replacement therapy to raise it to above 30 ng/ml is suggested.

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