

The association between vitamin D receptor polymorphisms and serum 25-hydroxyvitamin D levels with ulcerative colitis in Chinese Han population.

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Abstract

There is now growing evidence suggesting that Vitamin D is playing a critical role in modulating the innate and adaptive immune responses. Several polymorphisms have been identified in the vitamin D receptor (VDR) gene but their association with ulcerative colitis (UC) susceptibility remained controversial. In the current study, we examined the association between VDR polymorphisms and serum level of 25-hydroxyvitamin D [25(OH)D] with UC in Chinese Han population. Polymorphisms of FokI (rs2228570)/BsmI (rs1544410)/ApaI (rs7975232)/TaqI (rs731236) in the VDR gene were assessed in a case-control study comprising 404 UC patients and 612 controls. Moreover, 25(OH)D levels were measured by electro-chemiluminescence immunoassay in 75 UC patients and 120 controls. Our results suggested that BsmI polymorphism frequency was significantly lower in UC patients ($P=0.028$), and the frequency of AAC haplotype formed by BsmI, ApaI and TaqI was also significantly lower in UC patients ($P=0.012$). Moreover, FokI polymorphism was more frequently observed in patients with mild and moderate UC as compared to those with severe UC ($P=0.001$, $P<0.001$, respectively). Average 25(OH)D level was lower in UC patients than in controls (19.3 ± 6.8 vs. 21.8 ± 7.3 ng/mL, $P=0.017$), and was significantly correlated with hemoglobin ($\beta=0.49$, $P<0.001$), C-reactive protein ($\beta=-0.36$, $P<0.001$), severity of UC ($\beta=-0.21$, $P=0.025$) and FokI polymorphism ($\beta=-0.20$, $P=0.031$) in UC patients. Interestingly, there was a significant correlation between FokI polymorphism and vitamin D deficiency (<20 ng/mL) in UC patients ($P=0.006$). Together, these results supported that VDR polymorphisms and 25(OH)D level were significantly correlated with UC risk and severity in Chinese Han population.

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