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Serum 25-hydroxyvitamin D, bone turnover markers and bone mineral density in postmenopausal women with hip fractures

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Background: Low levels of serum 25 (OH) D and high levels of bone turnover markers were associated with increased risk of fracture. We aimed to explore the relationship between serum 25 (OH)D, bone turnover markers and bone mineral density in senile postmenopausal women with hip fracture in North China (Beijing).

Material and Methods: 277 patients with hip fractures and 272 patients without fractures in postmenopausal women were included in this study. The serum 25 (OH)D, bone formation markers, including N-terminal extension propeptide of type-I collagen (P1NP), alkaline phosphatase (ALP) and osteocalcin (OC), bone resorption markers, including C-terminal telopeptide of type-I collagen (CTX-1), and bone mineral density were collected and analyzed.

Results: The univariate analysis showed that fracture-group patients had significantly lower levels of 25 (OH)D (12.33 VS 23.92, P<0.001). Serum CTX-1, P1NP and OC were significantly higher in patients with fractures compared with patients without fractures (0.67 VS 0.46, 53.57 VS 39.79 and 19.24 VS 15.64, P<0.001). Women in the fracture group had significantly lower femoral neck and total hip BMD than patients without fracture (0.694 VS 0.726 and 0.789 VS 0.828, P<0.001). After adjustment for age and other confounding factors, multivariable logistic regression analysis showed that serum 25 (OH)D (OR=0.878, 95%CI=0.855~0.902, p<0.001), CTX-1 (OR=4.884, 95%CI=2.419~9.861, p<0.001)and total hip BMD (OR=0.141, 95%CI=0.034~0.577, p=0.006) were independent risk factors for hip fractures in postmenopausal women. The receiver operating characteristics curves showed that serum 25 (OH)D had a good AUC value (0.830).

Conclusion: Monitoring the alteration of serum 25 (OH)D and CTX-1 in clinically might be useful for fracture prevention.

Biography

Jixing Fan is a Medical Student of School of Clinical Medicine, Tsinghua University. He will graduate in June, 2018. During the period of student, he specialized in Osteoporosis, hip fractures in senile patients under the guide of Dr. Liang He. Presently, he studies as an intern in Beijing Jishuitan Hospital, Beijing, China.

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