



Vitamin D deficiency and musculoskeletal pain

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Vitamin D is one of the essential metabolic and physiological processes in the human body. Generally all people need 200-600 IU daily (Koutkia, Chen & Holick 2001). Production of vitamin D in the skin depends on some factors such as age, skin pigmentation and the amount of ultraviolet B (UVB) available. The amount of UVB radiation is affected by geographic location, season, time and level of atmospheric pollution. The highest amount of vitamin D is provided to sunlight exposure (Gartner & Greer 2003) as well as obtaining from oily fish, fortified foods and supplement. The recommended vitamin D receiving depends on age, gender and deficiency treatment (Dobnig et al 2008).

Despite excessive oral vitamin D intake cause toxicity (Koutkia, Chen & Holick 2001), excessive sunlight exposure cannot cause vitamin D toxicity because UVB converts excess vitamin D₃ to biologically inert isomers (Holick 2007).

Different factors like physical inactivity, chronic acidosis, malnutrition, delayed puberty and malabsorption effect on bone mineralized (De Schepper 1990).

Parathyroid hormone (PTH) compensate for reduced serum calcium with calcium absorption from the bones, causing bone deformities and that this action has been done through activating osteoclasts inhabit. Excessive activate osteoclasts inhabit can lead to osteoporosis and increased PTH and serum calcium or metastatic calcification (Holick 2007).

Severe vitamin D deficiency with corresponding elevations of PTH were reported in 88% of women who presented with muscle pains and weakness. Myalgia is generally the first manifestation of vitamin D deficiency (Glerup et al 2000). Vitamin D deficiency affects in all parts of the body (Gartner & Greer 2003).

The high prevalence of vitamin D deficiency in patients with unspecified origin musculoskeletal pain was observed in the existed evidence (Gartner & Greer 2003). These studies represent there is significant relationship between unspecific pain and vitamin D deficiency that this relationship is independent of age group (Gartner & Greer 2003).

There is a strong relationship between vitamin D deficiency and persistent non-specific musculoskeletal pain. Therefore, the patients who suffering from unknown origin pain may be required to control their serum levels of vitamin D consequent to vitamin D therapy (Mascarenhas & Mobarhan 2004).

Studies have also shown that vitamin D therapy could improves extensive clinical complains regarding their bone pain and muscle weakness of women who referred to different clinics (Torrente de La Jara, Pecoud & Favrat 2004).

References

- Koutkia, P., Chen, T. C. & Holick, M. F. (2001) Vitamin D intoxication associated with an over-the-counter supplement. *New England Journal of Medicine*. 345, 66-7.
- Carol, L., Wanger, F. & Greer, R. (2003) Prevention of rickets and vitamin D deficiency: new guidelines for vitamin D intake. *Pediatrics*. 111, 908-10.
- Dobnig, H., Pilz, S., Scharnagl, H., Renner, W., Seelhorst, U., Wellnitz, B., et al. (2008) Independent association of low serum 25-hydroxyvitamin d and 1, 25-dihydroxyvitamin D levels with all-cause and cardiovascular mortality. *Archives of internal medicine*. 168 (2), 1340-9.

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Koutkia, P., Chen, T. C. & Holick, M. F. (2001) Vitamin D intoxication associated With an over-the-counter supplement. *New England Journal of Medicine*. 345 (1), 66-7.

Holick, M. F. (2007) Vitamin D deficiency. *New England Journal of Medicine*. 357, 266-81.

De Schepper, J. (1990) Endocrine disorders associated with cystic fibrosis. *Academisch Ziekenhuis Kinderen-V. U. B., Laarbeeklaan 101, Brussels, Belgium*.

Glerup, H., Mikkelsen. K., Poulsen, L., Hass, e., Overbeck, S., Thomsen, J., et al. (2000) Commonly recommended daily

intake of vitamin D is not sufficient if sunlight exposure is limited. *Journal of internal medicine*. 247, 260-8.

Gartner, L. M. & Greer, F. R. (2003) Prevention of rickets and vitamin D deficiency: new guidelines for vitamin D intake. *Pediatrics*. 111, 908-10.

Mascarenhas, R. & Mobarhan, S. (2004) Hypovitaminosis D-induced pain. *Nutrition Reviews*. *Washington*. 62, 354-60.

Torrente de La Jara, G., Pecoud, A. & Favrat, B. (2004) Musculoskeletal pain in female asylum seekers and hypovitaminosis D3, *British Medical Journal*. 329 (7458), 156.