

ORAL PRESENTATION

Open Access

Serum 25(OH) vitamin d level is associated with treatment outcome of whole-body vibration (WBV) for osteopenia in girls with adolescent idiopathic scoliosis (AIS)

Tsz Ping Lam^{1,2*}, Bobby Kin Wah Ng^{1,2}, Fiona Wai Ping Yu¹, Echo Ka Ling Tsang¹, Wayne Yuk Wai Lee¹, Franco Tsz Fung Cheung¹, Huan Xiong Chen¹, Jack Chun Yiu Cheng^{1,2}

From The 10th Meeting of the International Research Society of Spinal Deformities (IRSSD 2014 Sapporo) Sapporo, Japan. 29 June - 2 July 2014

Objectives

AIS was associated with low bone mass which, apart from being an important health issue that could persist into adulthood, was also a significant prognostic factor for curve progression in AIS. We have performed a randomized controlled trial on WBV and reported its effect on increasing femoral neck areal bone mineral density (aBMD) mainly at the dominant leg but less obviously at the non-dominant side. The objective of this study was to evaluate the role of Vit-D in affecting the anabolic bone effect of WBV.

Material and methods

This was a study nested within a randomized controlled trial with enrolment of 122 AIS girls (15-25 years old) with BMD Z-scores < -1. They were randomly allocated to the Treatment or Control group. The Treatment group received WBV by standing on a low-magnitude high-frequency WBV platform 20 mins/day, 5 days/week (acceleration 0.3g, frequency 35 Hz). The Control group received observation alone. The study period was one year. aBMD at bilateral femoral necks was measured with Dual-Energy X-ray Absorptiometry at baseline and at 12-month. Serum 25(OH)Vit-D level by liquid chromatography tandem mass spectrometry was measured at 6-month within the treatment period.

Results

The mean age was 17.8(SD=1.5) years old and mean Cobb angle was 29.4(SD=8.8) degrees. Subgroup analysis for those with serum 25(OH)Vit-D>40nmol/L revealed not only the positive effects of WBV were greater at both sides, treatment effects were explicitly also noted at the non-dominant leg. In addition, the positive correlation between serum 25(OH)Vit-D and percentage increase in femoral neck aBMD that was not present in the Control group was explicitly detectable in the Treatment group at the non-dominant leg(p=0.004).

Conclusions

The results strongly suggested the treatment effect of WBV could be enhanced through its synergistic factor interaction with Vit-D. The study carried significant clinical implication in that Vit-D insufficiency could affect negatively the treatment outcome of WBV for low bone mass in girls with AIS.

Funding source

General Research Fund, Research Grants Council of Hong Kong (Project no: 467808 and 468809).

Authors' details

¹Department of Orthopaedics and Traumatology, The Chinese University of Hong Kong, Hong Kong. ²Joint Scoliosis Research Center of the Chinese University of Hong Kong and Nanjing University, China.

¹Department of Orthopaedics and Traumatology, The Chinese University of Hong Kong, Hong Kong

Full list of author information is available at the end of the article

Published: 19 January 2015

doi:10.1186/1748-7161-10-S1-O56

Cite this article as: Lam *et al.*: Serum 25(OH) vitamin d level is associated with treatment outcome of whole-body vibration (WBV) for osteopenia in girls with adolescent idiopathic scoliosis (AIS). *Scoliosis* 2015 **10**(Suppl 1):O56.

**Submit your next manuscript to BioMed Central
and take full advantage of:**

- Convenient online submission
- Thorough peer review
- No space constraints or color figure charges
- Immediate publication on acceptance
- Inclusion in PubMed, CAS, Scopus and Google Scholar
- Research which is freely available for redistribution

Submit your manuscript at
www.biomedcentral.com/submit

