



Vitamin D deficiency linked to tuberculosis

Patients with active tuberculosis are more likely to be vitamin D deficient than the rest of the population. New research, presented at the annual Society for Endocrinology BES meeting in Harrogate, shows that the majority of patients with tuberculosis (TB) have low levels of vitamin D, leading to the possibility that vitamin D supplementation could reinforce current treatments or be used as a preventative measure against tuberculosis.

Researchers at the Central Middlesex Hospital in London, led by Dr Vassiliki Bravis, examined the prevalence of vitamin D deficiency in an ethnically diverse population in London who had active tuberculosis. Out of 158 patients in the study, only 11 (7%) had adequate vitamin D levels. Additionally, patients' vitamin D levels did not vary seasonally as expected, but remained constant throughout the year. It is currently unclear whether these findings represent a contributory factor to TB infection, with people with low vitamin D levels being more likely to contract the disease, or whether tuberculosis infection makes the body process vitamin D in an abnormal way, leading to patients becoming deficient. More research is now needed to establish whether vitamin D could provide a new line of treatment or preventative medicine against tuberculosis.

Vitamin D is manufactured by the skin after exposure to UV rays from sunlight. If you live in the UK, your vitamin D levels should fluctuate seasonally with the amount of sunlight you are exposed to, being higher in the summer and lower in the winter. Approximately 14.5% of the UK population is vitamin D deficient. However, vitamin D deficiency is more common amongst the Asian and African population, in whom TB infection is also more prevalent. Previous work indicates that vitamin D may help ward off tuberculosis as it mediates a key immune response against the bacterium that causes TB. Tuberculosis is a major global health problem, which causes over 2 million deaths every year.

Researcher Dr Vassiliki Bravis said:

“Previous research has shown that high levels of vitamin D can help inhibit tuberculosis infection. Our work shows that, within a London population, the majority of TB patients we treat are vitamin D deficient. Currently, we don't know whether this vitamin D deficiency is a contributing factor towards them developing the disease or whether tuberculosis infection makes the body process vitamin D in an abnormal way, meaning that sufferers subsequently become vitamin D deficient. Looking towards the future, we now need to carry out trials to

establish whether vitamin D supplementation could be used effectively to either prevent or help treat tuberculosis infection.”

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Notes for editors

This paper will be presented as a poster (number 17) at the Society for Endocrinology BES meeting. Posters will attended between 13:00 – 13:45 on Wednesday 9 April 2008. The abstract for this work is reproduced below: see <http://www.endocrine-abstracts.org/ea/0015/ea0015P17.htm>.

The Society for Endocrinology BES 2008 is Britain's biggest scientific meeting on hormones, and is taking place at the Harrogate International Centre, Harrogate, from 7-10 April 2008. For the full programme, please see <http://www.endocrinology.org/meetings/2008/BES2008/prog/prog.aspx>.

Please mention the Society for Endocrinology BES meeting in any story

The Society for Endocrinology is Britain's national organisation promoting endocrinology and hormone awareness. For general information, please visit our website: <http://www.endocrinology.org>

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ABSTRACT

Prevalence of Vitamin D deficiency in a London population diagnosed with active tuberculosis

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INTRODUCTION: Epidemiological evidence suggests that Vitamin D (25(OH)D3) deficiency is an acquired risk factor for tuberculosis(TB). Lack of sunshine during the winter reduces 25(OH)D3 levels markedly, but darker skin pigmentation reduces 25(OH)D3 synthesis in African and Asian populations wherever they live.

AIMS: To examine 25(OH)D3 deficiency and its associations in TB patients in a regional population.

METHODS: Serum 25(OH)D3 concentrations were measured pre-treatment in patients with active TB, from January 2006 to September 2007. Prevalence of 25(OH)D3 deficiency and its relation to ethnic origin, skin colour, site of TB, duration in the UK, month of 25(OH)D3 estimation were determined.

RESULTS: 158 patients (13 UK-born) were identified (71 female, 87 male). Mean age was 32(SD+14). Only 11(7%) had adequate 25(OH)D3 levels.

Of 61 Black patients, 2 had adequate 25(OH)D3 levels, 34 were insufficient, 25 were deficient. Of 87 Asian patients (60 Indian, 4 Pakistani, 2 Sri Lankan, 2 Bangladeshi, 2 Afghani), 7 had adequate 25(OH)D3 levels, 47 were insufficient, 33 were deficient. Of 4 White patients, 1 had adequate

25(OH)D3 levels, 2 were insufficient, 1 was deficient. Of 6 other patients(1 Nepalese, 2 Pilipino, 2 Brazilian, 1 Chinese), none had adequate 25(OH)D3 levels.

There was no association between serum concentrations of 25(OH)D3 and skin pigmentation, site of TB or duration of residence in the UK. There was no apparent seasonal variation in either TB diagnosis or 25(OH)D3 level. The expected rise of 25(OH)D3 to peak concentrations in the summer months was absent in our TB population. Of 20 patients with TB drug resistance only 1 had adequate 25(OH)D3 levels.

CONCLUSION: Patients with active TB have low serum 25(OH)D3 concentrations and do not show the expected seasonal variation. Possible abnormal handling of the vitamin may contribute to that. Clinical trials may help determine whether 25(OH)D3 supplementation prevents reactivation of latent TB infection.