Vitamin D deficiency associated with chronic fatigue in brain injured patients

New evidence presented at the European Congress of Endocrinology has shown that vitamin D deficiency is closely associated with the chronic fatigue that often follows post traumatic brain injury (TBI).

TBI is a major cause of death and disability worldwide. In the European Union the annual incidence of TBI hospitalizations and fatalities is estimated at 235 per 100,000 people. This means that on average a large European state such as the UK, France or Germany, will have around 140,000 new traumatic brain injuries every year (national figures vary). Around two-thirds of post TBI patients go on to suffer chronic fatigue. Now a group of researchers in the Netherlands have linked vitamin D deficiency to chronic fatigue in post-TBI sufferers.

The group, led by Dr Jessica Schnieders from Rijnstate Hospital in Arnhem, The Netherlands, looked at vitamin D and hormone levels in 90 fatigued and non-fatigued subjects. They also systematically evaluated pituitary hormones and factors such as sleep, attention, emotional well-being, quality of life, coping style, and daily activity. They found that 51% of TBI patients were severely fatigued 10 years after the trauma. Vitamin D deficiency was present in 65% of post TBI patients and significantly related with fatigue (P<0.05), with patients who suffered from fatigue more likely to be vitamin D deficient. The group also found a higher incidence of growth hormone and sex hormone deficiency in the fatigued group, but they found no evidence that these deficiencies contributed to the fatigue.

This work opens the possibility that correcting the vitamin D deficiency might help to reduce some of the chronic fatigue in TBI patients. However, as vitamin D levels in the body are affected by diet and time spent in the sunshine, further studies are now needed to confirm whether low vitamin D levels are a cause of the fatigue or whether they are a consequence of altered lifestyle led due to suffering from fatigue.

Lead researcher, Dr Jessica Schnieders said:

“In the Netherlands we have 30,000 people every year who suffer a traumatic brain injury and many of these go on to suffer from chronic fatigue. This is early work, so we need to confirm that vitamin D is the cause of this fatigue, and if so to see if taking vitamin D, perhaps coupled with improved sleep patterns, can alleviate some of the symptoms."
“We looked at patients around 10 years after their trauma. Fatigued post traumatic brain injury patients are less active, and generally experience a reduced quality of life. They have difficulties in maintaining relationships and keeping jobs, and are less independent than people who have not had to cope with such trauma.”

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Notes for editors

The poster (number 559) will be presented at the European Congress of Endocrinology Prague at 13:00-15:30, Sunday 25 April 2010. The abstract for this work is reproduced below: see link http://www.endocrine-abstracts.org/ea/0022/ea0022p559.htm

The 12th European Congress of Endocrinology, Europe’s biggest scientific meeting on hormones, is taking place at the Prague Congress Centre, Prague from 24-28 April 2010. For the full programme, see http://www.ece2010.com/.

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ABSTRACT

Hormonal and non-hormonal factors contributing to chronic fatigue in traumatic brain injury patients

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Introduction: Every year 30 000 patients will suffer a traumatic brain injury (TBI) in The Netherlands. About two-thirds will develop post-TBI chronic fatigue (CF). Hormone deficiencies related to pituitary damage might contribute.

Aim: To examine the clinical importance of hormonal and non-hormonal factors as issues contributing to chronic fatigue in post-TBI subjects.

Patients and methods: The checklist individual strain (CIS), a well-validated questionnaire to assess fatigue severity, was sent to 332 TBI patients, age 18–65 years. The questionnaire was returned by 166 patients. A random sample of 100 fatigued and non-fatigued subjects was asked to participate: 26 females and 64 males agreed. All subjects underwent an extensive endocrine evaluation and non-hormonal causes for fatigue were studied by means of questionnaires evaluating, sleep, attention, emotional well being, quality of life, coping style, and daily activity/dependency. Physical performance was evaluated by the Æstrand bicycle test.

Results: The prevalence of severe fatigue was 51%. Fatigued subjects had more anxiety and a lower quality of life (QoL). Pituitary hormone deficiencies (PHD), defined as a subnormal serum level of one or
more pituitary hormones, was present in 29% of the subjects, GH deficiency (GHD) was present in 24%, and gonadal hormone deficiencies (GnD) in 10%. PHD occurred about twice as frequently in the fatigued group ($P=0.12$). Vitamin D deficiency, defined as a serum 25-hydroxyvitamin D level (25-OHD) <50 nmol/l) was present in 65%. Sleep disorders and serum 25-OHD levels were related with fatigue ($P<0.05$), whereas PHD, gender, attention, BMI and coma duration were not.

**Conclusions:** Vitamin D deficiency and sleep disturbances were identified as the most important factors contributing to post-TBI fatigue. Correction of vitamin D deficiency and improvement of sleep quality might reduce fatigue in these patients.