Nutrition and Dietetics

Can Rise in Morning Cortisol, as an Indicator of Stress Reactivity, Be Changed During a Multidiciplinary Intervention for Chronic Pain and Work Related Disability? A Feasibility Study

Kari Soretvedt

The Occupational Rehabilitation Centre in Rauland (AiR), University Hospital of Northern Norway, Norway

Abstract

Background: Many clinicians have observed the high grade of overlap of symptoms in patients suffering from chronic musculoskeletal pain, other chronic pain, depressive disorder, post traumatic stress disorder and irritable bowel syndrome. See Kato et al. (1), Cohen et al. (2) and Croft et al. (3). It has been proposed that these conditions can have common causes and common pathophysiological pathways involving biological, cognitive and emotional factors, see Getz et al. (4). Perhaps the reason why the pathophysiological processes are sparsely understood, could be a lack in coherence with the "biomedical paradigm of understanding"? See Kirkengen & Ulvestad (5).

Long lasting stress can influence the immune system. Cortisol take part in regulation of immune processes, and can be a link between stress and the immune system. See Segerstrom & Miller(6) and Glaser & Kiecholt-Glaser (7). High cortisol can activate inflammatory processes in peripheral tissues and in the central nervous system. Cortisol can influence cognitive processes in the hippocampeal area. See Sorelles et al. (8).

The stress- responsive hypothalamic- pituitary-adrenal (HPA) axis is involved in pain regulating through the endogenous opoid regulation system. See Kreek (9). The HPA axis has been reckoned as one possible way for the body to "remember" traumatic and stressful events, even back to fetal life. See Brand et al(10) and van Voorhees & Scarpa (11). For pain conditions with presumed multifactorial causes, multidiciplinary interventions are often employed, as in rehabilitation clinics.

Our study: In this study we explored the rise in morning salivary cortisol after awakening in 17 patients in an occupational rehabilitation clinic, specimens gathered shortly after arrival and three weeks later, during a rehabilitation program. Health complaints were measured at arrival with a questionnaire, the Subjective Health Complaint Inventory, recording symptoms the last 30 days, with some complementing questions. Almost all patients, 94%, reported musculoskeletal pain and 76% reported gastrointestinal complaints, 90% reported tiredness, 75% depression, and 65% sleep problems. There was perceived cognitive problems, with attention problems in 90% and problem with memory in 75%.

Results: The mean value for cortisol awakening response, measured as the difference between cortisol value at awakening and 30 min thereafter, was 6.7 (SD=4.9) nmol/l on day 2 and 2.7 (SD=5.6) on day 22. The mean value for cortisol morning rise calculated in percent of the value at awakening was 187% (high) on day 2 and 51% (normal) on day 22 of the rehabilitation period. See Fig. 1.

Conclusion: High cortisol awakening response could be part of a reaction to long lasting psychosocial stress, connected with different diagnoses, including long lasting musculoskeletal pain. Our study indicates a possible effect of a multidiciplinary rehabilitation program, measured in change in the cortisol awakening response. The results of this study are not statistical significant, but could be further explored in an extended study.

Biography

Kari Storetvedt completed her profession in Occupational Rehabilitation in the centre of Occupational Rehabilitation in Rauland(Air), 3864 Rauland Norway, Now working in the University hospital of Northern Norway (UNN) at the Department of Physical and Rehabilitation Medicine, at Tromso, Norway. .

Publications

Kari Storevedt, Anne Helene Garde, Can Morning rise in salivary cortisol be a biological parameter in an occupational rehabilitation clinic?A feasibility study (2014).

Citation: Kari Soretvedt, *Can Rise in Morning Cortisol, as an Indicator of Stress Reactivity, Be Changed During a Multidiciplinary Intervention for Chronic Pain and Work Related Disability? A Feasibility Study*,Global Summit on Health and Fitness, Webinar, Aug 25, 2020, 10