Bulimia Nervosa is associated with Visceral Adipositas and big Adrenal Glands - Initial Results

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Introduction

A high visceral adipose tissue (VAT) volume is accompanied by an increased risk of cardiovascular disease and insulin resistance. VAT turn-over is regulated by stress hormones such as e.g. cortisol, produced in the adrenal cortex. It is postulated that high long term stress is accompanied by big adrenal glands. The aim of this study was to proof the hypothesis that young women suffering from bulimia nervosa (BN) have more visceral fat and a bigger adrenal volume (AV) than healthy controls.

Methods

Thirteen patients with BN and eleven healthy age and weight matched women, aged between 19-36 years (mean 24, +/- 3 years), with a BMI of 19-29 (mean 24, +/- 3) were examined. Bulimia was diagnosed by DSM-IV criteria and the severity of the illness by the Eating Disorder Inventory (EDI-2). Whole body fat distribution and AV were determined using a whole body MR scan (T1) and a 3D-sequence (T1) at 1.5 Tesla. The salivary cortisol was determined at 9 am and 4 pm.

Results

BN patients had (in direction) more VAT per whole body volume (2.6 % vs. 1.8 %, $p = 0.057$) and an increased AV per whole body volume (0.068 % vs. 0.048 %, $p = 0.064$) than the healthy controls, although weight and BMI were not different. EDI-2 correlated (nearly significantly) with the AV ($r = 0.56$, $p = 0.06$) in Bulimia but not with the VAT-Volume. The VAT correlated significantly with the AV in healthy women ($r = 0.62$, $p = 0.04$) but not in BN ($r = 0.39$, $p = 0.2$).

Discussion

The isolated increase of the VAT volume (without any differences in simple anthropomorphic data like BMI or WHR) and the increased AV in BN women point to high stress levels associated with a hyperactivity of the hypothalamic-pituitary-adrenal (HPA) axis in these patients. This is supported by the correlation of the VAT volume with the clinical severity of the disease (EDI-2). Some of the tests were only nearly significant. But after an increase of the number of patients we are sure to get statistically significant results. This is the first MR study showing morphological changes in stress associated endocrine organs of young Bulimia nervosa patients. The study is pure research. But it is an example for the influence of psychiatric disorders on measurable morphological changes in the human body. This knowledge may influence therapy in the future.