



available at www.sciencedirect.com



journal homepage: www.elsevier.com/locate/psyneuen



Altered glucose tolerance in women with deliberate self-harm

Sofie Westling^{a,*}, Bo Ahrén^b, Charlotta Sunnqvist^a, Lil Träskman-Bendz^a

^a Department of Clinical Sciences, Psychiatry, Lund University, 221 85 Lund, Sweden

^b Department of Clinical Sciences, Medicine, BMC, Lund University, 221 84 Lund, Sweden

Received 23 September 2008; received in revised form 1 December 2008; accepted 30 December 2008

KEYWORDS

Glucose tolerance test;
Deliberate self-harm;
Violent;
Insulin;
Glucagon;
Borderline personality disorder

Summary Disturbances in glucose metabolism are of importance for violent behaviour in men, but studies in women are lacking. We used the 5 h-oral glucose tolerance test (OGTT) in this study of 17 female psychiatric patients, selected for violent behaviour directed against themselves (deliberate self-harm) and 17 healthy controls matched for age and BMI. Following OGTT, patients had higher glucose levels at 30 min ($p = 0.007$) and increased glucagon area under the curve ($p = 0.011$). Since a co-morbid eating disorder might affect results, we as a post-hoc analysis subgrouped the patients and found that the increased glucagon levels only were present in patients with an eating disorder. In contrast, those without an eating disorder showed a significantly lower p-glucose nadir ($p = 0.015$) and unaltered glucagon levels compared to controls. There were no significant differences in insulin and C-peptide levels between patients and controls. We conclude that deliberate self-harm in women may be associated with alterations in carbohydrate metabolism in certain groups. Eating disorder is a confounding factor.

© 2009 Elsevier Ltd. All rights reserved.

1. Introduction

Several studies have investigated the relationship between glucose metabolism and impulsive aggressive behaviour in healthy men as well as in male forensic psychiatry patients. During the oral glucose tolerance test (OGTT), a reactive hypoglycaemic tendency after the initial rise in plasma (p-)glucose has been found in habitually violent men (Bolton, 1973; Benton et al., 1982; Virkkunen and Huttunen, 1982; Virkkunen, 1982, 1983, 1986; Virkkunen and Narvanen, 1987; Virkkunen et al., 1994). In some of these men hypo-

glycaemia has persisted throughout the OGTT. The counter-regulation of hypoglycaemia is a complex system, involving a decrease in insulin secretion and an increase in several counter-regulatory factors, augmenting p-glucose, of which the hormone glucagon is the most potent during the immediate phase (Cryer, 1993). The hypoglycaemic tendency found in habitually violent men may thus be explained by either an imbalanced insulin secretion, which does not decrease when p-glucose is reduced, or an insufficient secretion of the counter-regulatory factors raising p-glucose. Early studies by Virkkunen and coworkers have found increased insulin levels, proposing this as the cause of the hypoglycaemia (Virkkunen, 1982, 1983). A recent study, examining men with habitually violent behaviour, found that they, compared with healthy controls, had

* Corresponding author. Tel.: +46 735 62 60 99; fax: +46 46 17 38 44.
E-mail address: sofie.westling@med.lu.se (S. Westling).

significantly lower basal glucagon levels, which could be a possible explanation for their hypoglycaemic tendencies (Virkkunen et al., 2007).

The men in these studies often showed self-aggression and had made several violent suicide attempts (Virkkunen and Narvanen, 1987). In psychiatric care, violent behaviour among patients is often directed towards the self, and includes deliberate self-harm as well as attempted suicide. This kind of violent behaviour is commonly, but not exclusively, associated with borderline personality disorder, a comorbid diagnose in many of the patients studied by Virkkunen (1986). Furthermore, epidemiological studies among adolescents in the United States have found that aggressive behaviours directed against oneself, and aggressive behaviours towards other people often occur in the same individuals (Borowsky et al., 2001; Centers for Disease Control and Prevention, 2004).

Treatment of deliberate self-harm is traditionally psychotherapeutic although hospitalization as well as polypharmacy combining anti-depressant, anti-psychotic as well as tranquilizing medication is common. In patients with severe deliberate self-harm, treatment effect is often limited, and mortality rates in completed suicide are high. Examining glucose metabolism in these patients is a completely new approach and if altered glucose metabolism is found, new treatments might develop as complement to the present ones.

Whereas disturbed glucose metabolism has been found in aggressive men, it is not known whether this is the case also in women. We therefore investigated insulin and glucagon secretion and glucose tolerance during OGTT in women with deliberate self-harm. Our primary hypotheses were:

- (1) Women with deliberate self-harm have high self-rated physical aggression.
- (2) Women with deliberate self-harm have lower p-glucose nadir (lowest value measured during the OGTT) compared to healthy controls.
- (3) Women with deliberate self-harm have increased insulin secretion during OGTT compared to healthy controls.
- (4) Women with deliberate self-harm have decreased glucagon secretion compared to healthy controls.

2. Methods

2.1. Participants

From February 2005 to December 2007, female patients with current deliberate self-harm, attending the Division of Psychiatry at the University Hospital in Lund were asked to participate in the study. Inclusion criteria were a history of deliberate self-harm (Hawton et al., 2002) for at least 2 years with at least five incidents occurring during the last 6 months. In order to try to make the group more homogeneous we decided only to include patients with a borderline personality disorder, a condition associated with violent behaviour directed towards self or others. Exclusion criteria were diabetes mellitus or an active liver disease (defined as a twofold rise in p-alanine aminotransferase (ALAT) or p-aspartate aminotransferase (ASAT)). Seventeen patients were finally included. Controls matched for sex, age (± 8 years) and body mass index

(BMI) ($\pm 2 \text{ kg m}^{-2}$) were recruited from a random selection of the population register in the city of Lund and non-randomly among students at the University of Lund.

The patients were diagnosed according to the Diagnostic and Statistical Manual of Mental Disorders, fourth edition, axis I, II and III (American Psychiatric Association, 2000). All subjects were classified and rated by the corresponding author. All patients had a borderline personality disorder according to the Structured Clinical Interview for DSM IV-Axis II disorders (First et al., 1998). Two patients fulfilled the criteria for one axis I diagnosis, six fulfilled the criteria for two, further six fulfilled the criteria for three, and three patients fulfilled the criteria for four axis I diagnoses. Twelve of the patients had anxiety disorders, 10 had a mood disorder, seven had an eating disorder, seven had a substance use disorder (four with alcohol abuse), two had an Attention Deficit Hyperactivity Disorder, one had a dissociative disorder, and one had psychotic symptoms not other specified. Thirteen patients had somatic diagnoses, of which asthma/allergy ($n = 6$) and hypothyroidism ($n = 2$) were the most common ones. All patients used medication. Fifteen used a psychotropic medication; no patient used lithium. The most common medication for somatic diseases were inhalators/anti-allergic medication ($n = 6$), contraceptives ($n = 5$) and omeprazol ($n = 4$). Six of the healthy controls used hormonal contraceptives and five used nutritional supplements. The patients' medications had not been changed for a median of 33 days (interquartile range 24–88 days). Only nine of the 17 patients had regular menstruation.

2.2. The Aggression-Questionnaire Revised Swedish Version (AQ-RSV)

Level of aggression was estimated by use of the AQ-RSV (Prochazka and Agren, 2001). AQ-RSV consists of 29 items, distributed into four scales, measuring the aggression factors physical aggression (nine items), verbal aggression (five items), anger (seven items) and hostility (eight items). Each item is rated on a 4-point scale, from the least to the most characteristic of the subject. We used the scale for Physical aggression in order to see if our subjects could be regarded as comparable to the habitually violent men in the studies by Virkkunen and co-workers. The raw score presented in the table is the total sum of the ratings of items included in the scale for physical aggression. In the English version of the aggression questionnaire, the sub-scale physical aggression has a reliability of 0.80 and significant correlations have been found between the sub-scale and peer nomination (Buss and Perry, 1992). Reliability and validity has not been tested in the Swedish version. However, the internal consistency of the four aggression subscales and the total score was evaluated by the alpha coefficients (Cronbach's alpha). The alphas of physical aggression were comparable in the American and Swedish populations and the alpha coefficients indicated considerable internal consistency. Normative data for AQ-RSV has been obtained earlier from the general population (Prochazka and Agren, 2001). We used a formula developed by Helena Prochazka (personal communication) to compare our patients to women in the general Swedish population. AQ-RSV has not previously been used on patients with deliberate self-harm.

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات