DERANGED RESPONSE TO AN ACUTE PSYCHOSOCIAL STRESS IN PATIENTS WITH ANOREXIA NERVOSA REPORTING CHILDHOOD MALTREATMENT: EVIDENCE FOR A “MALTREATED ECOPHENOTYPE”?

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BACKGROUND AND AIMS

People affected by psychiatric disorders and reporting childhood trauma exposure are characterized by more severe psychopathology and specific neurobiological alterations [1-2]. Altered stress reactivity of the hypothalamus pituitary adrenal (HPA) axis is probably involved for those persistent detrimental effects in adulthood [3]. Although, both early traumatic experiences and interpersonal stress are recognized as potential risk factors for anorexia nervosa (AN) [4-5], no study so far has investigated reactivity to psychosocial stress in patients with AN and history of maltreatment. Therefore, the aim of our study was to investigate emotional and salivary cortisol responses to an acute psycho-social challenge in AN patients reporting childhood trauma exposure.

METHODS

Twenty-four AN women and 17 healthy women, attending the eating disorders centers of the Departments of Psychiatry at the University of Campania “Luigi Vanvitelli” and the University of Salerno, were included in the study. Patients were classified as maltreated (Mal) or non-maltreated (noMal) according to the Childhood Trauma Questionnaire (CTQ). Participants underwent the Trier Social Stress Test (TSST) and their emotional responses were measured through the state scale of the State-Trait Anxiety Inventory. Saliva samples were collected to measure cortisol production during the test. Cortisol area under the curve relative to the ground (AUCg) and with respect to the increase (AUCi) were also calculated. Two-way analyses of variance (ANOVA) and covariance with repeated measures were employed to test differences in saliva cortisol levels and anxiety scores among the group. One-way ANOVA was adopted to assess differences in emotional response to TSST and the cortisol response, evaluated as AUCg and AUCi, among the group.

RESULTS

Two-way ANOVA with repeated measure yielded that Mal AN women exhibited a flattened cortisol response to TSST as compared to both noMal AN participants and healthy women (Fig. 1, left panel). When the cortisol response to TSST was quantified as the AUCg and AUCi, cortisol AUCi was significantly higher in both noMal AN women and healthy women, as compared to Mal AN patients (Fig. 1, right panel). Analysis of emotional responses revealed that in both noMal and Mal AN women STAI-S scores before and after the TSST were significantly higher than in normal controls. Moreover, in Mal AN participants STAI-S scores were significantly higher than in noMal AN ones before but not after the psychosocial stress (Fig. 2, left panel). When anxiety increase was evaluated as the difference between post and pre-TSST STAI-S scores (Delta STAI-S), Mal AN subjects showed a lower increase in anxiety levels with respect to both healthy women and noMal AN participants (Fig. 2, right panel).

Fig. 1: Saliva cortisol production (left panel) and areas under the curve with respect to the ground (AUCg) and to the increase (AUCi) (right panel) in maltreated (Mal) and no-maltreated (noMal) anorexia nervosa (AN) women and in healthy women undergoing the Trier Social Stress Test (TSST).

*p < 0.05, **p < 0.01, ***p < 0.005 vs Mal AN women (post-hoc Tukey's test).

Fig. 2: State anxiety levels (left panel), as measured by the State-Trait Anxiety Inventory (STAI), and STAI-S Delta scores (right panel) in maltreated (Mal) and nomaltreated (noMal) anorexia nervosa (AN) women and in healthy women undergoing the Trier Social Stress Test (TSST).

*p < 0.01, **p < 0.005, ***p < 0.05 vs either noMal AN women and healthy women (post-hoc Tukey's test).

CONCLUSIONS

Our results show a significantly decreased saliva cortisol response to TSST in AN women reporting childhood maltreatment compared to both AN women and healthy women without history of childhood trauma exposure, suggest that childhood trauma exposure has persistent detrimental effects on the HPA axis reactivity to a psychosocial stressor in adults with AN. Besides the altered biological response, Mal AN patients displayed a reduced anxiety increase after TSST as compared to either noMal patients or healthy women. This deranged biological and emotional responses to an acute social stress in AN patients with childhood trauma exposure, support the hypothesis of a “maltreated ecophenotype” [6] also in Eating Disorders.

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