Metabolic and Hormonal Correlates of Childhood Abuse in Women With and Without Schizophrenia

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BACKGROUND

- Childhood trauma is associated with hypothalamic-pituitary-adrenal (HPA) axis activation and a heightened inflammatory response in early life that can lead to lasting aberrations in immune and endocrine function.
- This has been demonstrated specifically in women and in people with schizophrenia, but it is unknown whether women with schizophrenia experience specific metabolic/endocrine disturbances in response to early trauma.
- This study aims to characterize the metabolic and hormonal effects of childhood abuse in women, and examine whether they differ in women with schizophrenia.

METHODS

- 40 female participants (20 with schizophrenia [SZ] and 20 healthy controls [HC]) completed the following:
  - Childhood Trauma Questionnaire (CTQ), a retrospective self-report measure for severity of childhood abuse and neglect in five domains
  - Weight, height, and waist measurements
  - Serum hormone testing
- Pearson correlations were used to identify associations between biomarkers and CTQ scores (total and subscales).
- Standardized cut-offs were used to create dichotomous abuse variables from the CTQ. Univariate linear regression analyses were used to assess whether exposure to abuse predicted any biomarker measures.

RESULTS

	Women with SZ (n = 20)	Healthy Controls (n = 20)	Total (n = 40)
Age (yrs)	47 (31 to 65)	45 (31 to 58)	46 (31 to 65)
BMI* (mean, SD)	37.97(37.97)	31.43(9.32)	34.78 (9.98)
Weight**(lb) (mean, SD)	228.85 (62.16)	189.78 (62.81)	209.31 (64.77)
Waist*** (in) (mean, SD)	44.55(8.63)	39.14(9.02)	41.78(9.13)

Figure 1: Demographics & metabolic parameters
SD = standard deviation. On independent samples t-tests between groups: *p = 0.039, ** p = 0.055, *** p = 0.063.

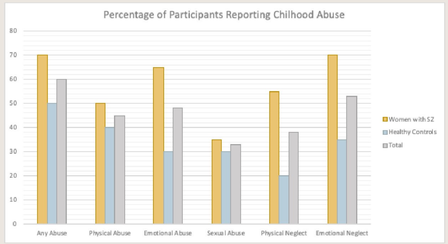


Figure 2: Percentage of participants reporting childhood abuse as measured by CTQ total and subscale scores
A significant association was found between diagnosis of SZ and physical neglect ($X^2(1, N=40)=5.23$, p=.048. Otherwise, no significant relationships were found between study group and exposure to abuse.

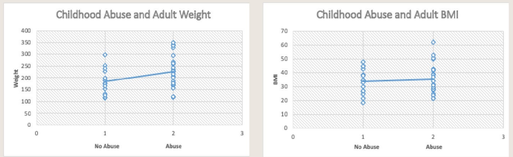
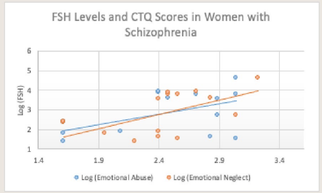


Figure 3: Childhood abuse predictive of adult weight and BMI
Exposure to childhood abuse predictive of increased weight (β=.329, p=.038A) and BMI (β=.345, p=.031) in adulthood for the sample as a whole.



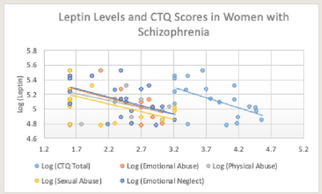


Figure 4: Hormonal correlates of childhood abuse in women with SZ
FSH levels were positively correlated with scores for emotional abuse (r=.541, p=.031) and neglect (r=.617, p=.011). Leptin levels were negatively correlated with total CTQ score (r=-.558, p=.01) and scores for emotional (r=-.581, p=.007), physical (r=-.463, p=.04) and sexual abuse (r=-.522, p=.018) and emotional neglect (4=-.491, p=.028).

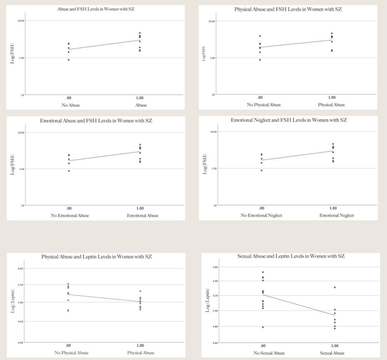


Figure 5: Predictors of hormone levels in women with SZ
Exposure to any abuse (β=.584, p=.017), physical abuse (β=.509, p=.044) or emotional abuse or neglect (β=.584, p=.017) predicted increased FSH levels, while exposure to physical (β=-.436, p=.055) and sexual abuse (β=-.564, p=.01) predicted decreased leptin levels.

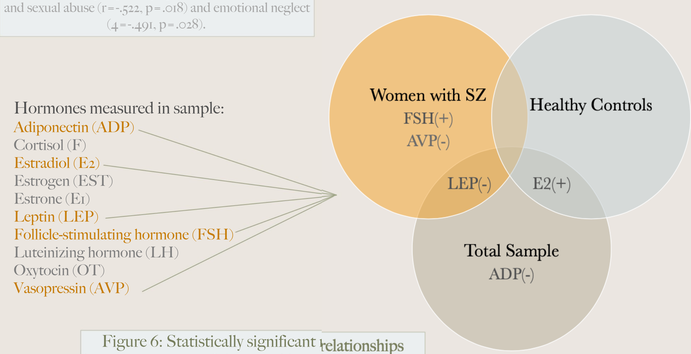


Figure 6: Statistically significant relationships between any type of abuse and hormonal measures, with direction of association indicated (+/-)

DISCUSSION

- Exposure to childhood abuse predicted increased weight and BMI in all participants, consistent with previous literature on childhood trauma and metabolic syndrome.
- Exposure to abuse was predictive of increased FSH and decreased leptin, with severity of abuse correlated positively to FSH levels and negatively to leptin levels *only in women with schizophrenia.*
- Some evidence supports lower basal FSH and higher basal leptin levels in SZ vs HC, but it is inconsistent.
- High daily stress has been associated with higher FSH and childhood trauma has been implicated in blunting leptin response to physiological stimuli, but in healthy populations.
- The current results suggest that the neuroendocrine response to childhood trauma in women is modulated differently in those with schizophrenia and highlight the importance of further study characterizing the biological response to trauma in this particular population.

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