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**MOLECULAR AND
HORMONAL MECHANISMS**

Program chair: Tom Hildebrandt

President: Rachel Yehuda

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**New York
September 11–14, 2012**

ISPNE ABSTRACT BOOK

HOT TOPICS

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Larger amygdala volumes after childhood trauma associated with depression and cortisol response to psychosocial stress in adulthood

Background: Childhood trauma is a major risk factor for the development of affective disorders later in life. We sought to determine whether this risk is linked to neurostructural changes in limbic brain regions after childhood trauma.

Methods: We recruited 49 medically healthy adult women (28.2 ± 7.1 years of age) from the Atlanta area to include women with/without childhood trauma and with/without major depression (MDD). Childhood trauma exposure was quantified using the Childhood Trauma Questionnaire (CTQ). Lifetime and current diagnoses of MDD and posttraumatic stress disorder (PTSD) were assessed using the Structured Clinical Interview for DSM-IV (SCID). Current depressive symptoms were assessed using the Hamilton Rating Scale for Depression (HAM-D). Magnetic resonance images were acquired, preprocessed, and registered into stereotactic space. Volume analyses of the left and right amygdala were performed using the interactive software package DISPLAY developed at the Brain Imaging Center of the Montreal Neurological Institute, and a standardized segmentation protocol was applied to outline the anatomical boundaries of the amygdala. Total plasma cortisol responses to the Trier Social Stress Test (TSST) were measured.

Results: When stratifying groups by childhood trauma exposure and MDD, women with both childhood trauma and MDD had largest right amygdala volumes compared to all other groups (interaction effect: $F = 6.172$, $p = 0.017$). Correlational analyses revealed that higher CTQ scores were associated with larger left ($r = 0.31$, $p < 0.05$) and right ($r = 0.31$, $p < 0.05$) amygdala volumes. These correlations remained significant when controlling for age, race, and lifetime diagnoses of MDD and PTSD. Higher CTQ scores were associated with current depression scores ($r = 0.30$, $p < 0.05$), which in turn were positively associated with the size of the right amygdala volume ($r = 0.32$, $p < 0.05$). Finally, the size of the left amygdala was associated with increased cortisol response to the TSST (15 min post TSST: $r = 0.44$, $p < 0.05$, 30 min post TSST: $r = 0.436$, $p < 0.05$). A similar trend was observed for the right amygdala.

Conclusions: These findings add to the growing understanding of the neurobiological basis that may underlie the association between early adverse experience, stress vulnerability, and increased risk for affective disorders.

Keywords: early life stress; amygdala; depression

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Effects of prenatal psychosocial stress on pregnancy outcomes and physical and neurobehavioral development in infancy with gender-difference

Statement of the problem: Previous animal experiments suggest that prenatal stress affects pregnancy outcomes and impairs cognitive functions of offspring. Our goal was to investigate how prenatal exposure to stressful life events influence pregnancy outcome and infant's physical and neurobehavioral development.

Methods: A clinical trial was performed. One thousand eight hundred and fifty-six pregnant women were willingly assessed using the Life Events Scale for Pregnant Women (LESPW) before delivery. Those whose score were more than or equal to 375 on LESPW were assigned to higher levels of psychological stress during pregnancy. One hundred and forty-two cases were selected from 1856 pregnant women controlling for variables such as gestational age, maternal age, obstetric complications, socioeconomic status, and trait anxiety. The prenatal stress (PNS) group and