were estimated in cortical, limbic, and striatal brain regions using the simplified reference tissue model. Plasma concentrations of estradiol (E2), progesterone (P4), follicle stimulating hormone (FSH) and luteinizing hormone (LH), were examined at the time of the PET examinations. The timing of ovulation was examined with ultrasound of the ovaries.

Results: The statistical analysis showed no significant differences in 5-HT1A receptors BP and 5-HTT BP between follicular and luteal phases of the menstrual cycle for any of the investigated regions. The only notable non-significant changes were found in the dorsal raphe where a lower 5-HT1A receptors BP was found in the follicular compared to the luteal and a higher 5-HTT BP was found in the follicular compared to the luteal phase. In none of the regions significant correlations between hormones E2, P4, FSH and LH, and 5-HT1A receptors BP and 5-HTT BP were found. Plasma hormone concentrations implied on expected pattern of secretion in the follicular and luteal phases and mean values were within normal reference ranges.

Conclusion: In conclusion, no changes in 5-HT1A receptors and 5-HTT BP were found during the menstrual cycle phases in healthy women. The results provide principally new in vivo finding on human female biology, suggesting the absence of influence of menstrual cycle phases on central serotonergic transmission. The finding however does not preclude that gonadal hormones differently influence central serotonin system in women and men contributing to the gender differences in serotonin implicated disorders.

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P.1.e.017 Lateral ventricle volume is related to lipid peroxidation in male patients with first episode psychosis

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Background and Purpose of the study: Studies in children and adolescents with first episode psychosis (FEP) have consistently shown ventricular enlargement in patients compared with control subjects [1]. These structural brain changes at early stages of the disease would support the hypothesis that pathological neurodevelopment is involved in the etiology of psychosis [2]. Furthermore, there is increasing evidence that excessive oxidative stress may be involved in the pathophysiology of psychosis [3]. Increased levels of lipid peroxides are the most commonly used index of oxidative cell damage. Therefore, we aimed to assess the relationship between lateral ventricular volumes and lipid peroxides (LP) levels in children and adolescents with FEP. As volumetric differences are more evident in males than females [2], this analysis focussed on males.

Methods: As a part of the CAFEP study [4], 40 male patients with FEP and a < 6 month history of psychotic symptoms (mean age 15.8 (SD = 1.7), range 9–17 years) and 42 male control subjects (mean age 15.2 (SD = 1.9), range 9–17 years) were enrolled in this study. Brain imagines were acquired by magnetic resonance imaging (MRI) (T1-weighted 3D gradient echo sequence, matrix size 256×256, voxel size 1×1×1.5 mm). To measure the volume of the lateral ventricles, a method for semi-automated segmentation of the brain based on the Talairach proportional grid system was used. Lipid peroxidation was determined by a standardized spectrophotometric method (Bioxytech, CA, USA) in a diode-array spectrophotometer (Beckman, CA, USA). For statistical analyses, brain volumes were converted to a percentage of total intracranial volume, and lipid peroxides (LP) were log-transformed.

Results: There were no significant differences in age, race, years of education, or socioeconomic status between FEP patients and controls. Right lateral ventricle (RLV) and left lateral ventricle (LLV) volumes were significantly greater in FEP patients than in controls (RLV: 11.2 ml (6.6) vs. 7.7 (2.3), $p = 0.001$; LLV: 12.3 ml (7.4) vs. 9.1 (2.6), $p = 0.009$). There were no statistical differences in LP between patients and controls (9.8 mcM (13.1) vs, 6.9 (4.6), $p = 0.286$). Partial correlations between LP and lateral ventricle volumes (controlled for FEP (as a dichotomous variable: patient/control), age, intelligence quotient (IQ), mean lifetime daily dose of antipsychotic treatment (DOSE), and days since onset of positive symptoms (TIME) were LP-RLV: 0.211, $p = 0.052$, and LP-LLV: 0.280, $p = 0.009$. A multivariate general linear model was applied with RLV and LLV volumes as dependent variables, FEP as a fixed control factor, and LP, age, IQ, TIME, and DOSE as covariates. Results (Table 1) showed that the only significant contribution to RLV volume was FEP ($p = 0.022$), while there was a trend for LP ($p = 0.070$). On the other hand, the only significant contribution to LLV volume was LP ($p = 0.014$).

Conclusions: These results suggest that oxidative stress may underlie the enlargement of lateral ventricles in male children and adolescents with FEP.

Relationship between lateral ventricle volumes and lipid peroxides. Multivariate general linear model

Dependent variable	Covariates	F	Significance
Right Lateral Ventricle	LP	3.404	0.070
	Age	0.165	0.686
	DOSE × TIME	0.006	0.938
	IQ	0.041	0.840
	FEP	5.550	0.022
Left Lateral Ventricle	LP	6.384	0.014
Age	0.001	0.982	
DOSExTIME	0.726	0.398	
IQ	0.205	0.652	
FEP	1.702	0.197	

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P.1.e.018 Cerebral metabolism in rats with low and high levels of ultrasonic vocalizations after exposure to chronic stress

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Introduction: Current research on the neurobiology of affective disorders emphasizes the search for reliable endophenotypes that transcend species specific boundaries and can aid in modelling human affective states in laboratory animals. While emphasis on negative emotionality prevails in contemporary research on depression, the importance of understanding positive affective states is gaining ground [1]. In the present study we used 55 kHz ultrasonic vocalizations (USVs), elicited by experimenter-induced tactile manipulations (tickling) of the animal that mimic the rough-and-tumble play in juvenile rats, as a marker of positive emotionality [2] and chronic variable stress regime to elicit negative affective state.

Objective: Investigate, whether rats with high and low baseline tendencies to express positive emotionality react differentially to chronic stress in terms of cerebral oxidative metabolism.

Identify novel putative brain substrates implicated in positive and negative affective states.

Methods: Male Wistar rats (n = 33) were single-housed at weaning and received daily 2-min experimenter-administrated tactile stimulation or "tickling" sessions, during which 55 kHz USVs (chirps) were recorded with Avisoft UltraSoundGate 116 ultrasound detector and analysed with Avisoft-SASLab Pro software. The tickling sessions lasted two weeks as we have previously seen that this period enables the distribution of animals in groups emitting high or low levels of 55-kHz USVs. Animals were divided into Low Chirpers (LC) and High Chirpers (HC) by median score. When rats reached adulthood at the age of 2 months, 17 of them were submitted to a CVS regimen, which lasted four weeks. Cytochrome c oxidase histochemistry which reveals persistent levels of regional neuronal activity was carried out as previously described [3] with modifications.

Results: Levels of chirping on day 14 were used to divide animals into LC- and HC groups with good reliability. Two-factor ANOVA revealed differences between groups in regions of amygdala, anterior thalamic nuclei, hippocampal areas CA1–3 and dentate gyrus, temporal cortex (regions 1 and 3), granular layer of retrosplenial cinculate cortex, ventrolateral thalamic nucleus, dorsal hypothalamic area, nucleus of the diagonal band and ventral tegmental area; with LC/stress group showing the highest overall metabolic activity. CVS regimen elevated metabolic activity of median raphe region in both LC-and HC-animals. Stress also increased metabolic activity in red nucleus and the ventral part of the anterior olfactory nucleus. In anteroventral thalamus an interaction between stress and ultrasonic vocalization factors was found, with LC/stress group animals having a significantly higher metabolic activity than rats from respective groups of LC/control and HC/stress.

Conclusions: Overall, it was found that rats that express lower levels of 55-kHz chirps, indicative of lower positive emotionality, reacted more strongly to chronic stress in terms of cerebral metabolism. This study also provides further evidence for separate neurobiological substrates of positive and negative affect and marks several novel candidate regions that warrant further investigation.

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P.1.e.019 Size, FDG-PET activity, and neuroleptic responsivity of the medialdorsal nucleus of the thalamus in schizophrenia

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The thalamus has been shown to have reduced size and functional activity in patients with schizophrenia. These effects may be most pronounced in the medial dorsal nucleus, which has rich connectivity with the prefrontal cortex. This connectivity appears diminished in patients with schizophrenia as inferred from analysis of the correlations between FDG-PET activity in frontal cortex and the medial dorsal nucleus. Lastly, the size of the anterior limb of the internal capsule, where thalamocortical fibers pass, has been found to be reduced in patients with schizophrenia. Thus the medial dorsal nucleus and the fronto-thalamic pathways appear important to the disturbance in the illness.

Recent PET studies with 18-F-fallypride, a high-affinity D2 ligand have shown lower binding potential in patients with schizophrenia. For these reasons we focused on the effects of neuroleptics in this area. Haloperidol, a potent D2 blocker was compared with Sertindole, an atypical antipsychotic with low movement disorder side effects, in a 6-week crossover study. Fifteen patients with schizophrenia (mean age 42.6, range 22–59, 11 men and 4 women) received sertindole (12–24 mg) or haloperidol (4–16 mg) for 6 weeks and then received a FDG-PET scan and an anatomical MRI. Patients were then crossed to the other treatment and received a second set of scans at week 12. Dose was adjusted by a physician blind to the medication type. The medial dorsal nucleus of the thalamus was traced on the anatomical MRI and applied to the FDG-PET. Reliability for tracings of thalamic nuclei were established in the 0.8 range. Greater activity was found in the left medial dorsal nucleus of the thalamus with sertindole than with haloperidol and the reverse was found for the right medial dorsal nucleus. This is consistent with our recent finding of greater decrease in fallypride binding potential in the left medial dorsal nucleus in patients with schizophrenia. Stereotaxically-defined Brodmann areas in the dorsolateral (44, 45, 46) were compared with orbitofrontal areas (11, 12, 47) revealing greater dorsolateral activity with sertindole than haloperidol and greater orbitofrontal