

the haemo-dynamically significant ASD from non-significant. It has a valuable impact on the clinical management.

1104 - August 26, 2003, 8:00 am - 9:30 am, Hall L

Neurology / Psychiatry: Psychiatric Disorders

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**Influence of the Type of Traumatic Event on rCBF Response to Auditory Experience Recall in Post Traumatic Stress Disorder. A SPET study.**

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**Aim:** Post traumatic stress disorder (PTSD) is a clinical condition that occurs in victims of major psychological trauma. Subjects reporting assaultive events (A) are more likely to be affected by PTSD as compared to those reporting not-assaultive events (NA). The aim of this study was to investigate the differences in regional cerebral blood flow (rCBF) between two groups of subjects exposed to either assaultive or not-assaultive traumas and developing or not PTSD. **Material and Methods:** Fourteen A and 33 NA subjects were included in the study. Among them 20 developed PTSD (S) and 27 did not (NS). The rCBF distribution was compared between groups during an auditory evoked re-experiencing of their traumatic event. <sup>99m</sup>Tc-HMPAO SPECT, using a three-headed gamma camera, was performed and the uptake in 29 bilateral regions of the brain was assessed using a standardised brain atlas. Analysis of variance (ANOVA) was used to test the significance of the differences in flow. **Results:** In the global analysis, rCBF significantly differed between groups (p<0.001), clinical status (p<0.05) and hemispheres (p<0.001). There was also a significant group x hemisphere interaction (p<0.02). The higher flow was found in the right hemisphere of the A group. The larger differences between A and NA were found in hippocampus, nc. caudatus, anterior cingulate, prefrontal and auditory cortex. When S and NS were compared the most striking differences were in nc. caudatus, anterior cingulate, prefrontal and anterior temporal cortex. **Conclusion:** Higher rCBF values under recall of their traumatic experience were found in A as compared to NA. A higher rCBF response was also found in S as compared to NS. The regions that seem to be mostly involved in the emotional response to the auditory re-experiencing are nc. caudatus and some cortical regions considered to be part of the limbic system. These findings confirm the higher morbidity of assaultive traumas and the functional substrate of PTSD symptoms.

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**Cerebral blood flow alterations induced by Vagus Nerve Stimulation in patients with treatment-resistant depression**

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**Aim:** Vagus nerve stimulation (VNS) is suggested to have clinically significant antidepressant effect in patients with treatment-resistant depression (TRD). The purpose of the study was to investigate the effect of vagus nerve stimulation (VNS) on cerebral blood flow in patients with TRD, focusing on depression-relevant regions (left prefrontal cortex, anterior gyrus cinguli, caudate nuclei) and VNS-relevant regions (mesial temporal regions [hippocampus/amygdala], medulla/brain stem, thalamus, hypothalamus, cingulate, right postcentral gyrus) according to recent literature. **Material and Methods:** <sup>99m</sup>Tc-hexamethyl propylene amine oxime (HMPAO) SPECT brain scans were acquired for 12 patients with TRD before and after 4 weeks of VNS treatment using an annular brain-dedicated SPECT system (Ceraspect, D. S. I.). Voxel-by-voxel analysis was performed using SPM99 to investigate cerebral blood flow alterations by VNS. SPECT scans were spatially normalized and paired t-test was used on a significance threshold of P<.01 for hypothesized regions to identify significant changes in cerebral blood flow. Patients were also rated by Hamilton Rating Scale for Depression (HRDS) before and 10 weeks after VNS treatment to assess clinical response. **Results:** 5 of 12 patients showed significant reduction of psychopathological symptoms measured by HRDS (> 50% reduction); however all patients showed a decrease in HRDS scores. On significance threshold of P<.01 a significant increase of cerebral blood flow was found in the left prefrontal cortex; a significant reduction of blood flow was found bilaterally in the hippocampus, the left nucleus caudatus and in the brain stem. **Conclusion:** As other antidepressant treatments (e. g. antidepressant medication, psychotherapy) VNS also shows typical regional blood flow alterations in the left prefrontal cortex with reduction of psychopathology, which reinforces the suggestion that VNS is effective antidepressant treatment modality. The similar findings in the limbic system and the brain stem as in VNS-treated epileptic patients underline the key function of these areas in the therapeutical mechanisms of VNS.

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**Serotonin Transporter Availability in Patients with Symptomatic Bulimia Using a Novel SPET Ligand I-123-ADAM**

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**Aim:** The serotonin system is believed to be affected in bulimia nervosa. Serotonin transporter (SERT) availability is believed to reflect presynaptic serotonergic function. There are no published data on SERT availability in midbrain area in patients with bulimia. In a previous SPET study in healthy subjects using <sup>123</sup>I-ADAM, a novel highly specific radioligand for SERT, we found highest SERT concentration in midbrain. Pons, thalamus and striatum also showed significant activities. Our aim was to evaluate the SERT availability in the midbrain area of symptomatic bulimic patients versus a healthy control group using <sup>123</sup>I-ADAM. **Subjects and Methods:** The group of bulimic patients included eight women (mean age 24 ± 2 years) and the control group nine women (mean age 36 ± 13 years). SPET studies were performed 10 minutes, 5 hours and 7 hours after injection of <sup>123</sup>I-ADAM. For quantification of brain SERT availability, the ratio of specific to non-specific <sup>123</sup>I-ADAM brain binding at 5 hours was used (V<sub>3</sub>" = (target region-cerebellum)/cerebellum). **Results:** The specific SERT binding in the midbrain area was similar in both groups. The V<sub>3</sub>" for the bulimic group was 1.80 ± 0.26 and for the control group 1.70 ± 0.34 (p>0.5). The SERT availability in the midbrain did not correlate with age in either of the groups (p>0.5 for both). **Conclusions:** In this preliminary analysis, we found no difference in the midbrain SERT availability between patients with bulimia and control subjects. The age difference between the two groups may have influenced the results. However, we do not believe this to affect our results significantly as there was no correlation between age and midbrain SERT availability in either of the groups. Further analyses on bulimic patients are needed to determine the SERT status in other brain areas such as thalamus, which is known to be involved in regulation of eating.

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**Principal Component Analysis and Volumes of Interest Analysis in Depressed Patients by <sup>99m</sup>Tc-HMPAO SPET - A Methodological Comparison**

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**Aim:** Several methods have been proposed to analyse radiopharmaceutical uptake in regional cerebral blood flow (rCBF) studies. Volume of Interest (VOI) analysis evaluates the 3D data in a predefined region. Principal Component Analysis (PCA), by reducing the number of VOIs to factors, takes also into account correlations between variables, reflecting presumably human brain anatomo-functional connectivity. The aim of this study was to assess rCBF differences in two groups of depressed patients and normal controls and to compare the results according to these two analysis methods. **Material and Methods:** 70 outpatients bearer of Major Depressive Disorder (MDD) along with audiological and physical symptoms and 66 normal controls (CTR) were studied by <sup>99m</sup>Tc-HMPAO SPET. rCBF was analysed in twenty-seven VOIs, bilaterally, automatically defined by a standardisation software (CBA). PCA was used to reduce the number of variables by grouping the VOIs in positively correlated factors. The differences between radiopharmaceutical uptake in MDD and CTR found at VOI level were then compared to those found at factor level. **Results:** PCA resulted in 11 factors that significantly interacted with groups (p<0.001). Increased rCBF was shown by both methods with several overlaps in frontal and temporal lobes and in central structures. All VOIs differing significantly between MDD and CTR were included in three out of the four significantly correlated factors. The last significant factor, that grouped VOIs belonging to temporal and parietal lobe, did not include any VOI reaching singularly the level of significance (p<0.05). **Conclusion:** Increased rCBF was found in a selected group of MDD outpatients. PCA grouped regions in factors according to their reciprocal rCBF positive relationships and highlighted significances in areas larger than those found at VOI level. One factor was significantly different between groups independently from significance in the single VOIs strengthening the value of investigating the correlation between variables. Factors represent cerebral areas with possible anatomo-functional connections and their analysis might help in shedding light on the interactions between different regions in MDD.

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**High- vs. low dose therapy with the atypical antipsychotic amisulpride: Effects on the striatal dopamine transporter and dopamine D2 receptors**

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**Aim:** Amisulpride appears to be an effective agent for treating positive and negative symptoms of schizophrenia depending on dose. The aim of this study was to assess striatal dopamine D2 receptor availability by means of [I-123]IBZM and to investigate the effects on the dopamine transporter on the basis of [Tc-99m]-TRODAT-1 SPECT in patients treated with high and low doses of this atypical antipsychotic drug. **Material and Methods:** A total of 28 patients (eighteen males, ten females, range 19-64 yrs) suffering from schizophrenia under treatment with high (sixteen patients, 400-1300 mg, mean dose 706 mg) or low doses (twelve patients, 200-300mg, mean 245 mg) of amisulpride were examined. Simultaneous brain SPECT scans were performed 3 h p. i. of 800 MBq [Tc-99m]TRODAT-1 and 2 h p. i. 185 MBq [I-123]IBZM. Images were acquired using a triple-head gamma camera (Picker Prism 3000 XP) equipped with fan-beam collimators. For semiquantitative evaluation transverse slices corrected for attenuation (Chang's first-order method) were used to calculate specific binding in the striatum with the