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Introduction Neuroimaging studies of attention-deficit/hyperactivity disorder (ADHD) have revealed structural deviations of the corpus callosum in children and adolescents. However, little is known about the link between callosal morphology and symptoms of inattention or hyperactivity in adulthood, especially later in life.

Objective We aimed to further expand this understudied field by analyzing a large population-based sample of 280 adults (150 males, 130 females) in their late sixties and early seventies.

Methods We applied a well-validated approach capturing the thickness of the corpus callosum with a high regional specificity at 100 equidistant points. In addition to correlating point-wise callosal thickness with ADHD symptom measures within the whole sample, we tested for sex interactions.

Results There were significant sex interactions with respect to measures of inattention and hyperactivity, with follow-up analyses revealing significant negative correlations in males (see Fig. 1 – Top). In contrast, there were positive correlations with respect to hyperactivity only in females (see Fig. 1 – Bottom).

Conclusion A thinner corpus callosum may be associated with fewer fibers or less myelination. Thus, the negative correlations, as observed in males, suggest an impaired inter-hemispheric communication necessary to sustain motor control and attention, which may contribute to symptoms of hyperactivity, impulsivity and/or inattention. The functional relevance and underlying mechanisms of the positive correlations, as detected in females, remain to be resolved.

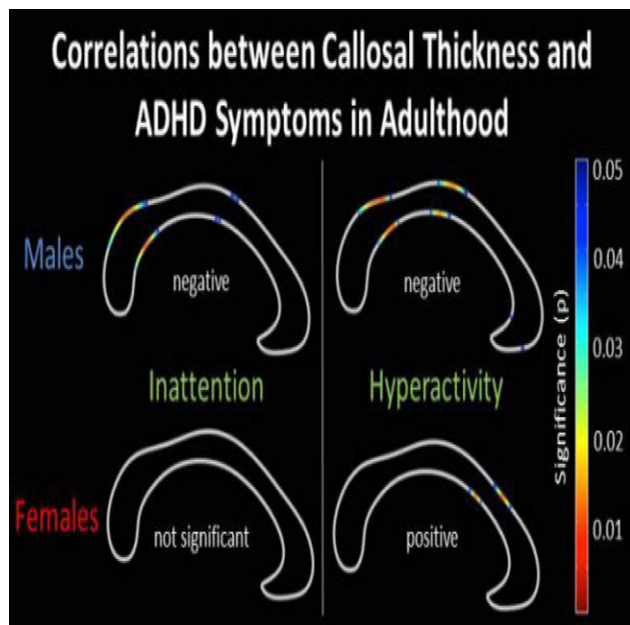


Fig. 1

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Gamma band dysfunction in patients with schizophrenia during a Sternberg Task: A wavelet analysis

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Background Increasing body of evidence suggest that patients with schizophrenia (SCZ) present dysfunction of the gamma band oscillations (GBO) during cognitive tasks. The current study aimed to explore the GBO activity in SCZ during a Sternberg task.

Materials and methods Twenty-eight chronic stabilized SCZ and 18 healthy controls (HC), were recruited. Ongoing EEG was recorded during the execution of the Sternberg task. Continuous EEG data were band-pass filtered (1–100 Hz) and corrected for eye blink and muscle artefacts by ICA. For each subject, the event-related-spectral-perturbation (ERSP) and the inter-trial-coherence (ITC) were computed at the Pz channel only for those stimulus-locked segments containing correct responses. GBO wavelet analysis was performed with two different increasing cycle ranges (3 to 5.8 and 12 to 22.6; frequency range: 30–90 Hz), to obtain the best information about temporal and frequency dynamics. Student's t test (with multiple comparisons FDR correction) was used to compare the groups.

Results During the maintenance phase (4000 to 4600 ms after the stimulus onset), SCZ presented a significant increase, respect to HC, in low GBO activity (range: 30–50 Hz;). In the other phases of the Sternberg task (encoding, probe presentation and response periods), no significant difference in GBO was observed between SCZ and HC.

Conclusions These findings are in line with the evidence that GBO dysfunction in SCZ is present during selective phases of the working memory task. Future studies have to clarify the role of GBO dysfunction on the cognitive performance and the clinical utility of selective GBO modulation during cognitive rehabilitation.

Disclosure of interest The authors have not supplied their declaration of competing interest.

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Sweet and bitter taste perception in anorexia nervosa: A functional MRI study

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Introduction Taste perception is a complex phenomenon modulated by different factors, such as taste receptors and memory brain circuits. The palatability of the food, that activates the central reward pathways, also plays an important role in taste perception. It means that taste is able to influence the choice of food and then eating behaviour.

Objectives It is well known that people with anorexia nervosa (AN) have a lower sensitivity to reward stimuli and recent stud-

ies suggested that altered function of taste neural circuitry may contribute to restricted eating in AN.

Aims The aim of this study was to evaluate, in patients suffering from AN, the activation of brain areas involved in taste perception and in central reward mechanisms to both pleasant and aversive taste stimuli and to correlate gustatory neurocircuitry activity with eating behaviours, temperament measures and/or sensitivity to reward and to punishment.

Methods Fifteen underweight female AN patients and sixteen normal-weight healthy women underwent a functional MRI to measure brain areas activation to repeated stimuli of a pleasant taste (sucrose solution), alternated with an aversive taste (bitter solution), and water taste.

Results Compared to healthy controls, patients with AN showed a significantly reduced activation of left insula and left dorsolateral prefrontal cortex to sweet stimulus and reduced activation of right parietal cortex to bitter stimulus.

Conclusions These results, if confirmed in future studies, may improve our knowledge about the pathophysiological mechanisms of AN.

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Implication of altered $\alpha 7$ nicotinic receptors and amyloid deposition in the Alzheimer's brain

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Introduction Brain amyloid- β protein (A β) deposition is a key pathology of Alzheimer's disease (AD). Cholinergic degeneration, including reductions in $\alpha 7$ nicotinic acetylcholine receptors ($\alpha 7$ -nAChR), is also known as a pathophysiology of AD. Recent imaging studies have shown cognitively normal subjects with A β depositions, indicating a missing link between A β deposition and cognitive decline.

Objectives To clarify relationships among the A β burden, $\alpha 7$ -nAChR availability, and cognitive declines in AD.

Aims To measure brain A β deposition and $\alpha 7$ -nAChR availability in the same patients with AD using positron emission tomography (PET).

Methods Twenty AD patients and age-matched 20 healthy adults were studied. The $\alpha 7$ -nAChR availability and A β deposition were evaluated using PET with [¹¹C]MeQAA and [¹¹C]PIB, respectively. Levels of specific binding were estimated by a simplified reference tissue method (BP_{ND}) for [¹¹C]MeQAA and a tissue ratio method (SUVR) for using [¹¹C]PIB. The values were compared with clinical measures of various cognitive functions using regions of interest (ROIs)-based and statistical parametric mapping (SPM) analyses.

Results [¹¹C]MeQAA BP_{ND} levels were extensively lower in the cholinergic projection regions of AD. There was a significant negative correlation between [¹¹C]PIB SUVR and [¹¹C]MeQAA BP_{ND} in the nucleus basalis of Meynert (NBM). The NBM [¹¹C]PIB SUVR was negatively correlated with the [¹¹C]MeQAA BP_{ND} level in the anterior and posterior cingulate cortices, whereas the relation within the same region showed weak correlation. Also we found signifi-

cant correlation between cognitive decline and [¹¹C]MeQAA BP_{ND} levels in the NBM.

Conclusions A β deposition-linked $\alpha 7$ -nAChR dysfunction may account for cognitive decline in AD.

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3-dimensional evaluation of lateral ventricle volumes of schizophrenia patients and investigation of the subgroups

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Introduction The thought of greater loss of brain tissue in Deficit Syndrome (DS) i.e. subgroup of schizophrenia with enduring primary negative symptoms defined by Carpenter et al.; this has not been verified by recent studies.

Objective Accumulated researches suggest that enlargement in Lateral Ventricles (LV) is related with current negative symptoms and poor prognosis. However, this has not been validated in DS.

Aims Our aim is to study the association between the enduring negative symptoms and LV changes schizophrenia. We included both deficit and non-deficit patients for comparison with controls.

Methods Forty-five patients (18 DS, 27 non-DS) and 37 healthy controls were recruited, evaluated for positive and negative symptoms, depression and extrapyramidal symptoms. Structural magnetic resonance imaging was performed. LV was assessed by MANCOVA (gender, age total brain volume as confounding factors) in 3-dimensional (3D) shape analyses. Correlations between clinical and imaging data were analyzed by Pearson correlation coefficient; $P > 0.05$ being significant.

Results LV of patients was found to be greater than controls, especially in regions adjacent to parietal and temporal regions but no significant difference between subgroups was detected. Enlargement in right LV by corpus callosum adjacency was found in DS. There was no correlation between negative symptoms and LV volume.

Conclusions The idea of greater amount of LV enlargement in patients with predominant negative symptoms could not be observed in 3D analyses. New pathophysiological theories are needed for the explanation of negative symptoms, loss of functioning and poor prognosis rather than only commenting about tissue decrease/loss.

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Schizophrenia and dementia. Morphological and spectroscopic findings. Baseline data

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