EPV0896

Frontal lobe tumor misdiagnose. A case report.

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Introduction: Space occupying lesions compromising frontal lobes usually may produce in the first place psychiatric symptoms such as progressive change of personality and/or symptoms suggestive of depressive episodes. Thus they can be misdiagnosed and mistreated.
Objectives: A case report is presented as well as an updated review of frontal lobe tumor diagnosis and treatment literature.
Methods: We present the case of a 45 years-old male patient with no relevant medical history who arrives at the mental health center due to behavioral disorders, depressive mood, workplace absenteeism and personal hygiene neglect in the last 3 months.
Results: Since the clinical picture was compatible with depressive disorder the patient was treated with psychotherapy and antidepressant drugs with no remission. Due to the treatment absence of response he attends emergency services where he is performed a craneal tomograpy (CT) where a right frontal lobe tumor (FLT) is observed.
Conclusions: In early stages FLT are sometimes presented as psychological mood or anxiety disorders without accompanying neurologic deficits. Thus, mental health professionals should be aware that psychological symptoms might be a presentation of organic disease of the brain and in some cases (e.g. middle-aged patients with affective symptoms with no previous mental health history) organic screening and hence brain imaging should be considered.

Disclosure: No significant relationships.
Keywords: depressive mood; Frontal lobe tumor; craneal tomography

EPV0895

Beta-band network modularity in resting-state EEG negatively correlates with level of intelligence

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Introduction: Recent studies mostly focus on the links between measures of alpha-band EEG networks and intelligence. However, associations between wide frequency range EEG networks and general intelligence level remain underresearched.
Objectives: In this study in a student sample we aimed to correlate the intelligence level and graph metrics of the sensors/sources-level networks constructed in different frequency EEG bands.
Methods: We recorded eyes-closed resting-state EEG in 28 healthy participants (21.4±2.1 y.o., 18 females, 1 left-handed). The Raven's Standard Progressive Matrices Plus ('SPM Plus', 60 figures) was used as an intelligence measure. We constructed networks for all possible combinations of sensors/sources-level and 4-8, 8-13, 13-30, or 4-30 Hz frequency bands using Weighted Phase-Lag Index (wPLI), and calculated four graph metrics (Characteristic Path Length, Clustering Coefficient, Modularity, and Small World Index) for each network. Spearman correlation (with Holm-Sidak correction) was applied to characterize the relations between the SPM Plus scores and all the network metrics.
Results: SPM Plus scores varied from 35 to 57 (mean 45.3±4.2), and the intelligence level negatively correlated with Modularity in beta-band ($r = -0.63$, $p_{corr} = 0.0253$).
Conclusions: High modularity may reflect relatively high segregation, but not integration, of networks (Girn, Mills, Christoff, 2019). Accordingly, our findings may shed light on the neural mechanisms of the general inefficiency of global cognitive processing in the case of intellectual decline related to different mental disorders. *Funding: This research has been supported by the Interdisciplinary Scientific and Educational School of Lomonosov Moscow State University 'Brain, Cognitive Systems, Artificial Intelligence'.*

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Keywords: Modularity; Intelligence; Resting-state EEG

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Development of human brain neuroimmune system under influence of alcohol

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Introduction: Exposure to alcohol causes imbalances in neuroimmune function and impaired brain development.
Objectives: Alcohol activates neuroimmune molecules, expressed and secreted by glial cells in the brain, alter neuronal function and stimulate alcoholic behavior.
Methods: The study involved women aged 25-41 years-did not drink alcohol 1 month before and during pregnancy – 1-st group; women with I-II degree of alcoholism 3-13 years – 2-nd group. Embryonic material were obtained 8-15 weeks of igestation. 2-nd group were divided into subgroups. Group Alcohol (A)-alcoholic women,s embrious, included 2 subgroups: A1-embryos 8-9 weeks,

A2-10-11 weeks of gestation (n=12). The Control group (K) includ control samples K1-8–9, K2-10-11 weeks (n=14). The analysis of changes in morphometric parameters was used to identify quantitative changes among glioblasts, correlation between the degree of differentiation components and the degree of influence of alcohol. For this, the program AxioVision 4.8 was used Parameters of GABAA/benzodiazepine receptors were studied by the radioreceptor assay of [3H]-flunitrazepam with synaptoneurosomes.
Results: Changes in glioblasts tof human brain embryos and fetuses were revealed under conditions of chronic prenatal alcoholization with an increase in gestational age compared to the control subgroups: a significant increase in the average number of glioblasts, the length of the perimeters of the presynaptic terminal, postsynaptic density, presynaptic terminal areas were significantly less (p<0, 01) in the study group than in the control. Exposure to ethanol reduces the affinity of GABAA/benzodiazepine receptors, which affects neuronal plasticity associated with the development of glioblasts and neuroblasts during embryogenesis.
Conclusions: Changes in microglial cause disruption of the neuronal activity

Disclosure: No significant relationships.
Keywords: embryogenesis; neuroimmune system; brain; alcohol; glioblast; GABAA receptor; synapse

EPV0897

Identifying prodromal biomarkers for schizophrenia and bipolar disorder using magnetoencephalography

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Introduction: Schizophrenia (SZ) and bipolar disorder (BD) are severe mental illnesses with large overlapping heritability. Both disorders are associated with altered neurophysiological responses, as measured with magnetoencephalography (MEG) or electroencephalography (EEG), particularly reduced mismatch negativity (MMN) and 40 Hz auditory steady-state responses (ASSR). These deficits could potentially both serve as early markers of illness and provide insight into the underlying pathophysiology as endophenotypes. First-degree relatives to patients with SZ and BD also show some neurophysiological deficits, however whether these deficits can be detected in adolescent offspring of patients is undetermined.
Objectives: We aim to investigate whether adolescents at familial high risk of schizophrenia and bipolar disorder show aberrant MMN and ASSR compared to population-based controls.
Methods: We will investigate MMN and 40 Hz ASSR in 15 year old adolescents (n ≈ 175) born to parents diagnosed with either SZ (FHR-SZ), BD (FHR-BD), or neither SZ or BD (population-based controls, PBC) using MEG. We will first perform sensor-level analyses and subsequently apply dynamic causal modeling (DCM) to investigate effective connectivity and make inferences about the underlying neurobiological mechanisms. We will investigate whether current psychopathology, cognitive status, and genetic risk for SZ and BD predict neurophysiological responses in the adolescents. Investigations are part of The Danish High Risk and Resilience Study - VIA (VIA15), a population-based longitudinal cohort study integrating social, psychological and biological risk factors and outcomes for SZ and BD.
Results: Final results are expected in 2024
Conclusions: The VIA15 study will allow for unprecedented insight into the neurobiological development of schizophrenia and bipolar disorder.

Disclosure: No significant relationships.
Keywords: bipolar disorder; Magnetoencephalography; familial high-risk; schizophrénia

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Exploring the selective gray matter profile of autism spectrum disorder through Bayes Factor Modeling

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Introduction: Despite decades of brain MRI research demonstrating atypical neuroanatomical substrate in patients with autism spectrum disorder (ASD), it remains unclear whether and to what extent disorder-selective neuroanatomical abnormalities occur in this spectrum. This, and the fact that multiple brain disorders report a common neuroanatomical substrate, makes transference and the application of neuroimaging findings into the clinical setting an open challenge.
Objectives: To investigate the selective neuroanatomical alteration profile of the ASD brain, we employed a meta-analytic, data-driven, and *reverse inference*-based approach (i.e.; Bayes fACtor mOdeliNg).
Methods: Eligible voxel-based morphometry data were extracted by a standardized search on BrainMap and MEDLINE databases (849 published experiments, 131 brain disorders, 22747 clinical subjects, 16572 x-y-z coordinates). Two distinct datasets were generated: the ASD dataset, composed of ASD-related data; and the non-ASD dataset, composed of all other clinical conditions data. Starting from the two unthresholded activation likelihood estimation (ALE) maps, the calculus of the Bayes fACtor mOdeliNg was performed. This allowed us to obtain posterior probability distributions on the evidence of brain alteration specificity in ASD.
Results: We revealed both cortical and cerebellar areas of neuroanatomical alteration selectivity in ASD. Eight clusters showed a selectivity value 90%, namely the bilateral precuneus, the right inferior occipital gyrus, left lobule IX, left Crus II, right Crus I, and the right lobule VIIIA (Fig. 1).
Conclusions: The identification of this neuroanatomical pattern provides new insights into the complex pathophysiology of ASD, opening attractive prospects for future neuroimaging-based interventions.

Disclosure: No significant relationships.
Keywords: reverse inference; cerebellum; default-mode network; structural MRI