Introduction: The comorbidity between cardiometabolic and psychotic disorders develops early. This is a crucial window of opportunity to reduce excess morbidity and mortality. Recently, a cardiometabolic risk prediction algorithm for young people with psychosis, the psychosis metabolic risk calculator (PsyMetRiC) was developed and externally validated in the UK. However, its international transportability is unknown.
Objectives: We performed the first international validation study of PsyMetRiC in Lausanne, Switzerland, and examined whether additional variables (clinical and/or genetic) may improve the predictive performance of the algorithm
Methods: We included people aged 16-35y with psychosis from the PsyMetab cohort, who did not have MetS at baseline, and who had 1-6y follow-up data. The PsyMetRiC partial (age, sex, ethnicity, body mass index, smoking status, and prescription of a metabolically-active antipsychotic) and full (also including high-density lipoprotein and triglycerides) algorithms were applied. Predictive performance was assessed using measures of discrimination (C-statistic) and calibration (calibration plots). Recalibration steps included refitting the intercept and/or slope if necessary. Additional variables (e.g. speed of weight gain, polygenic risk scores) were added to the model and predictive performance was reassessed.
Results: We included 545 participants. The discrimination performance of both PsyMetRiC algorithms was good (C>0.75), and calibration plots showed good agreement between observed and predicted risk. Additional analyses to be conducted.
Conclusions: PsyMetRiC is likely to be generalizable for use in Switzerland, suggesting that PsyMetRiC may also be suitable for use in other European populations. While additional international validations are required, these findings are an encouraging step toward an international cardiometabolic risk prediction algorithm for young people with psychosis.

Disclosure: No significant relationships.
Keywords: Psychosis; risk prediction; young adults; cardiometabolic

EPV1031

Personalization of virtual reality for treatment of mental disorders by using a unified morphometric indicator

U. Moskvitina*

Belgorod State National Research University Institute of Medicine, Department Of Psychiatry, Narcology And Clinical Psychology, Belgorod, Russian Federation
*Corresponding author.
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Introduction: The search for approaches to creating a precision personalized virtual reality for the treatment of mental disorders is urgent. (Belkasim, 2005; Park M.J. et all., 2019).
Objectives: To develop a new approach to personalize the form of virtual reality content to the neurophysiological and anatomical parameters of the patient's brain, to improve the quality of precision VR therapy for mental disorders.
Methods: The MRI study was carried out on a GE Optima 450w apparatus with a magnetic field induction of 1.5 Tesla. We used a radio frequency coil for the head. T1-weighted images were obtained with a field of view (FOV) of 24.4 x 14.8 cm and a slice thickness of 0.5 mm. Later, the images were built in three standard mutually perpendicular planes. Measurements were carried out using standard tools on an eFilm 4.0 WorkStation. FreeSurfer 4.5.0 was used to calculate the surface area of the cerebral hemispheres. To estimate the surface area of the room and the design of the shape in VR closed environment Autodesk AutoCAD 2018.
Results: A new approach to personalization of the form of virtual reality content has been developed (Patent No. RU (11) 2 668 697 (13) C1, 2018;Patent No. RU (11) 2 753 234 (13) C1, 2020). It is based on the use a single morphometric indicator for a closed VR space and brain.
Conclusions: Research and applied analysis of the developed approach is required. The development of this area will make it possible to create precision products for the therapy and rehabilitation of mental disorders.

Disclosure: No significant relationships.
Keywords: treatment of mental disorders; precision virtual reality; personalized virtual reality; a unified morphometric indicator

EPV1032

Genetic and epigenetic variations in BDNF gene involved in Anorexia Nervosa

N. Ramoz[1]*, G. Maussion[1,2], J. Clarke[1,3] and P. Gorwood[1,3]

[1]University of Paris, Ipnp, Inserm U1266, Paris, France; [2]McGill University, The Neuro's Early Drug Discovery Unit (eddu), Montreal, Canada and [3]GHU Psychiatry & Neurosciences Paris, Clinique Des Maladies Mentales Et De L'encéphale (cmme), Centre Hospitalier Sainte-anne, Paris, France
*Corresponding author.
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Introduction: Anorexia nervosa (AN) is a chronic psychiatric disorder resulting from abnormal eating habits with a high prevalence (0.5%). AN involves genetic and epigenetic factors supporting that AN is a metabo-psychiatric disorder. One candidate gene for AN, validated by meta-analyzes, is *BDNF* which encodes the brain-derived neurotrophic factor. BDNF negatively modulates the central control of food intake and its injection in rodents induces weight loss and anorexia. In humans, we observed an association of its functional variant Val66Met/rs6265 and electrodermal response to images of thinness suggesting an association between rs6265 and a reward effect of weight loss in AN.
Objectives: This work study the impact of the functional polymorphism at risk rs6265, epigenetic variations in DNA methylation of *BDNF* gene and consequences on the concentrations of BDNF in AN patients.
Methods: DNA was isolated from 24 AN patients and 48 controls. DNA methylation was measured for sites spanning the BDNF gene using Infinium HumanMethylation450 BeadChip technology. The genotyping of rs6265 was performed by Taqman-SNP assay. The BDNF was dosaged by ELISA from plasmas.
Results: We observe that several sites are significantly hypermethylated in AN patients compared to controls. AN patients show significantly higher BDNF levels than controls. Finally, this BDNF concentration is significantly higher in AN carrying the risk Met66 allele.
Conclusions: This work demonstrates the effects of genetic and epigenetic variations of *BDNF*, which could constitute relevant diagnostic biomarkers of AN, and their likely consequences in the pathophysiology of AN. *This work was supported by the Nestlé Foundation.*