M60. POLYGENIC RISK SCORES AND SUBSTANCE ABUSE COMORBIDITY IN PATIENTS WITH SCHIZOPHRENIA AND BIPOLAR DISORDERS

Kristina Adorjan[1], Sergi Papiol[1], Katrin Gade[2], Dörthe Malzahn[3], Monika Budde[4], Fanny Aldinger[1], Janos Kalman[1], Urs Heilbronner[4], Heike Anderson-Schmidt[5], Peter Falkai[6], Joel Gelernter[7], Thomas Schulze[8]

[1]Institute of Psychiatric Phenomics and Genomics (IPPG), Medical Center of the University of Munich, Germany, [2]LMU Munich, Dep. of Psychiatry, [3]Dept. of Genetic Epidemiology, University Medical Center, Georg-August-University Göttingen, [4]Institute of Psychiatric Phenomics and Genomics, Medical Center of the University of Munich, [5]University Medical Centre Goettingen, [6]Molecular and Behavioral Neurobiology, Department of Psychiatry, Ludwig Maximillian University, Munich, Germany, [7]Yale Univ. School of Medicine, [8](Institute of Psychiatric Phenomics and Genomics (IPPG); Ludwig-Maximilians-University Munich, Munich, Germany)

Background Introduction: Cannabis is the most widely used illicit drug in the world. It is well established that substance abuse comorbidity i.a. cannabis use is much higher among patients with schizophrenia (SCZ) and bipolar disorders (BD) than in the general population. However, the relationship between SCZ, BD and cannabis use might be more complicated than it initially seems. Previous studies have revealed that a genetic predisposition to SCZ might be associated with increased use of cannabis in healthy individuals. Given this relationship, we intended to study whether polygenic risk scores (PRS) for SCZ predict cannabis use in patients with SCZ and BD. In addition we want to test whether cannabis PRS have an impact on cannabis use in these two subgroups.

Methods 1. In a sample of 630 individuals (N= 367 SCZ, and N= 263 BD) in the KFO/PsyCourse cohort (www.kfo241.de; www.PsyCourse.de), we tested whether PRS for SCZ predict cannabis use in patients with SCZ and BD. PRS reflect the cumulative burden of risk alleles carried by an individual according to the well-powered genome-wide association study (GWAS) investigated by the Psychiatric Genomics Consortium (PGC). 2. We will test whether cannabis use PRS calculated according to a recent GWAS from the International Cannabis Consortium (ICC) explains cannabis use in patients with SCZ and BD in our cohort. 3. We tested the replicability of our results in an independent sample from the USA (GAIN/TGen), with a sample size of 1.150.

Results First results: PRS for SCZ showed positive associations (R2=3.5 % p=0.0067) for “use” versus “never use” of cannabis in BD with the strongest association of PRS that were based on SNPs with a p-value ≤0.0001 in the original SCZ GWAS. This finding replicated in an independent sample of BD patients where higher PRS were also associated with a higher probability of cannabis use (OR=1.20 for increase of PRS by 1 sample sd, p=0.0105). Comparisons of PRSs in the groups "use" vs. „never use" showed repeated nominal significance (p <= 0.0436). No association was found in the same analyses for SCZ patients. Further analyses of cannabis PRS in the same samples will be conducted.

Discussion Conclusion: First results suggest that individuals with BD and an increased polygenic risk for SCZ are more likely to use cannabis. The association between BD and cannabis use might be not simply one of an environmental risk factor, but rather involves gene–environment interaction, as individuals choose and shape their own environment according on their own innate preferences.

Disclosure: Nothing to Disclose.