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Tardive dyskinesia in schizophrenia

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The effect of BMI categories was also reflected in the ORs of patients with >7% weight gain: BMI <25 vs BMI ≥30 OR=2.617, BMI ≥25 to <30 vs BMI ≥30 OR=1.583. No interaction was seen between the two factors of region and BMI category.

Conclusion: Several possible contributing factors were investigated and the majority were not relevant for predicting weight gain. However, patients with either under- or normal weight at baseline (BMI <25) were more likely to have clinically significant weight increase. Both region and BMI were of importance for predicting weight gain.

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P.110 Tardive dyskinesia in schizophrenia: Gene polymorphisms of muscarinic and adrenergic receptors

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Introduction: Tardive dyskinesia (TD) occurs in 20-30% of patients receiving long-term antipsychotic treatment [1,2]. A certain role belongs to genetic factors that might be related to sensitivity to development of TD. Inventing methods enabling the personifying of psychopharmacotherapy is principle task of fundamental and translational medicine [3].

A hypothetical model exists implying the involvement of muscarinic receptors in the development of TD. Genetic polymorphisms associated with increased activity of M1 receptors or reduced activity of M2 or M4 receptors may increase the incidence of extrapyramidal symptoms. Regarding adrenergic receptors unique assumptions in the literature imply involvement in the onset of antipsychotic side

effects referring to the fact that these receptors may be the targets of a number of atypical antipsychotics.

Aim: The objective of the study is to determine the possible role of muscarinic and adrenergic receptors genes in the pathogenesis of tardive dyskinesia in patients with schizophrenia.

Methods: This study was carried out in accordance with the Code of Ethics of the World Medical Association (Declaration of Helsinki 1975, revised in Fortaleza, Brazil, 2013), established for experiments involving humans. In total 449 patients with schizophrenia receiving long-term antipsychotic treatment were included in the study after obtaining written informed consent. The presence or absence of dyskinesia was measured with the abnormal involuntary movement scale (AIMS). Patients were divided into two groups: 121 patients with TD and 328 patients without it. Determination of a set of 22 allelic variants of *CHRM1*, *CHRM2*, *CHRM4* and 2 polymorphisms of *ADRA1A* was performed by polymerase chain reaction. Frequency distribution of the study sample was tested in accordance with the Hardy-Weinberg equilibrium. To assess the association of different genotypes with the disorder, odds ratio (OR) were calculated.

Results: A significant decrease in frequency was observed of the GG genotype (rs1824024) of gene *CHRM2* in patients with TD compared to patients without it ($\chi^2=6.161$, $p=0.046$). We found a significant decrease in the frequency of the TT genotype (rs2061174) (*CHRM2*) in patients with tardive dyskinesia compared to patients without movement disorders. The frequency of the T allele was significantly higher in patients with TD ($\chi^2=6.027$, $p=0.04$).

In addition a significant increase in frequency was found of the AA genotype (rs2036108) of gene *ADRA1A* in patients with TD as compared with the patients without it ($\chi^2=8.055$, $p=0.018$).

Discussion: The GG genotype of rs1824024 (*CHRM2*) carries a protective effect on TD (OR=0.4, 95% CI: 0.19 - 0.88; $\chi^2=6.03$, $p=0.03$). And the allele T of rs2061174 has predisposing effects on the development of TD (OR=1.38, 95% CI: 1.1 - 1.9; $\chi^2=3.84$, $p=0.04$). The similar situation was observed with the AA genotype and the A allele of polymorphism rs2036108 (*ADRA1A*) (OR1=4.11, 95% CI: 1.28 - 13.22; $\chi^2=8.05$, $p=0.02$ and OR2=1.5, 95% CI: 1.05 - 2.14; $\chi^2=5.06$, $p=0.02$).

Conclusions: This study identified associations between muscarinic and adrenergic receptors and development of tardive dyskinesia. Reduction or increasing of the frequency of some genotypes in patients with TD demonstrated the protective or predisposing effect of these genotypes regarding risk of TD.

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P.111 Visual hallucinations and lifetime use of HPPD-related drugs: Results from a large online survey

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Introduction: The DSM-5 defines hallucinogen persisting perception disorder (HPPD) as the re-experience of altered perceptions after use of hallucinogenic drugs, which causes clinically significant distress or functional impairment, and has no other likely cause [1,2]. Nevertheless, current evidence on HPPD is scarce and largely relies on case studies [2,3]. Considering the recent emergence of studies on hallucinogenic drugs as a promising treatment option in various psychiatric disorders, proper evaluation of potentially harmful side effects such as HPPD is necessary [4]. This study aims to investigate the association between lifetime use of several HPPD-related drugs and the current presence and phenomenology of visual hallucination-like experiences (VH), using data from a large online population sample.

Methods: Data was collected with an online survey on hallucinations in the general Dutch population, which was promoted through several national news media and science festivals. All included subjects (n=9.826) were aged 14 or over and filled out a questionnaire that assessed recent and lifetime use of 11 commonly used recreational drugs in the Netherlands. Based on previous literature [2,3,5], LSD, psilocybin, 2C-B and MDMA were considered to be HPPD-related drugs. Presence and phenomenology of VH in the past month were assessed with the Questionnaire for Psychotic Experiences (QPE). Subjects who reported use of HPPD-related drugs in the past month (n=442) were excluded from overall analysis, to avoid perceptual experiences during drug intoxication to influence the results.

Results: Subjects with reported lifetime use of HPPD-related drugs had a significantly increased percentage of VH in the past month (25.1%; n=436/1.740) in comparison to unexposed subjects (20.5%; n=1.661/8.086). This association remained statistically significant after correction for age, gender and education level (OR 1.3, 95%-CI 1.2-1.5). However, when comparing the phenomenology of current VH, there were no significant differences between the exposed and unexposed group in terms of experienced distress (16.1 vs. 16.9%; p.79, χ^2 0.07, df 1) or functional impairment (5.5 vs. 5.8%; p.67, χ^2 2.18, df 1)

Discussion: Our results indicate that lifetime use of HPPD-related drugs is associated with a slight but significant increase in the current presence of VH. However, the experienced distress of current VH and their impact on daily functioning do not differ between the exposed and unexposed group. These results indicate that burdensome VH can also occur in the general population without exposure to HPPD-

related drugs. This is in line with previous studies on HPPD, which consider the presence of chronic, burdensome perceptual disturbances after psychedelic drug use a rare phenomenon, whose occurrence may rather rely on an overall vulnerability based on several risk factors, than on the lifetime exposure to HPPD-related drugs alone [2-5]. Our results are applicable to a more general population and rely on cross-sectional assessments that were not specifically designed for HPPD-like experiences. Hence, our recommendation would be to incorporate assessment of HPPD-like experiences in upcoming therapeutic trials involving hallucinogenic drugs. This facilitates close monitoring of such experiences before and after drug exposure in a controlled setting, and would thus enhance insight in this phenomenon and potentially contributive factors in clinical populations.

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P.112 Avolition and microstructural brain abnormalities in Schizophrenia: Reduced fractional anisotropy in pathways connecting amygdala and insular cortex

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Background: The pathophysiology of the avolition/apathy domain of negative symptoms in schizophrenia is probably related to the dysfunctions of the motivation-reward system [1]. Although the nucleus accumbens (NAcc) and the ventral tegmental area (VTA) dopamine pathways appear to be central nodes of this circuit, structural and functional abnormalities have been reported in further key regions, in-