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Antipsychotic-induced extrapyramidal symptoms: pilot preventing search of potential genetic predictors in Belarusian population

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Background: The efficiency and safety of antipsychotic treatment for schizophrenia patients is still a challenge in clinical psychiatry. Investigation of genetic predictors which are involved in antipsychotic response will help treatment optimization and personalization.

Aim: To investigate associations of gene polymorphisms: DRD2 (rs1800497), CYP2D64, GSTM1, GSTT1, SLC6A4 (5HTTLPR), COMT (rs4680), NAT2 (rs1799929), MDRI (rs1045642) with extrapyramidal side effects induced by antipsychotics.

Study: Our sample was obtained from an observational, cross-sectional trial of patient diagnosed with paranoid schizophrenia and assessed for antipsychotic-induced Parkinsonism and akathisia symptoms using the extrapyramidal symptom rating scale. Patients were divided into three clinical groups: akathisia side effects only (n=48): Parkinsonism side effects only (n=57), 3) no extrapyramidal side effects (n=32). Statistical analyses were conducted in SPSS 22.0.

Results: There was a significant association of DRD2 rs1800497 with antipsychotic-induced Parkinsonism ($\chi 2=62,549$, $p<0.05$). Patients with Parkinsonism demonstrated a higher frequency of the DRD2 rs1800497 A2A2 genotype. Antipsychotic-induced akathisia showed more complex genetic contributions. Along with rs1800497 DRD2 ($\chi 2=19.02$, $p<0.05$), rs3892097 CYP2D6, and deletions in GSTM1 ($\chi 2=22,979$, $p<0.05$) and GSTT1 ($\chi 2=19,379$, $p<0.05$) were associated with akathisia.

Conclusions: According to the data obtained, mechanism of antipsychotic-induced akathisia may include influence of dopamine receptors functioning (DRD2) and xenobiotic toxicity (GSTM1, GSTT1) which may be induced by antipsychotic medication.

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