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IMPACT OF PHARMACOGENETICS IN PSYCHIATRIC CLINICAL PRACTICE: a case report showing a personalized treatment option

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Introduction

- Pharmacogenetics (PGx) explores how genetic variations in drug-metabolizing enzymes affect treatment response, aiming to improve efficacy and minimize side effects.
- Despite available PGx-based guidelines, its integration into psychiatry is still limited, though it is especially valuable for patients with treatment resistance or severe adverse effects.
- The Pharmacogenetics Outpatient Clinic combines psychiatric assessment with saliva-based genotyping of key cytochrome P450 enzymes, showing through this case report how PGx-guided therapy can enable more personalized and effective treatment.

Methodology

- Setting: Outpatient Pharmacogenetics Clinic (Parnassia Psychistric Institute Amsterdam)
- Participant: A psychiatric patient with a treatment-resistant condition
- First visit: Psychiatric evaluation, medication history, DNA collection
- Genotyping Analysis of Cytochrome P450 enzymes: CYP2C19, CYP2D6, CYP1A2, CYP3A4
- Second Visit: Extensive explanation of Personalised medical and non-medical recommendations based on genotyping results and patient's history
- Follow-up: Evaluation of patient's outcome and satisfaction

Results

- DSM-V Diagnoses: Generalized Anxiety Disorder. Obsessive Compulsive Personality Disorder, Autism Spectrum Disorder
- Medication History: Aripiprazolo, Quetiapine, Bupropion, Methylphenidate, Zopiclon, Glycopyrronium Bromide
- Psychological Interventions: CBT, ACT, Schema Therapy, Group Therapy
- Current Medication: Escitalopram, Glycopyrronium Bromide

Genotyping results :

Polymorphism	Phenotype	Genotype
CYP2B6	IM	*1/*6 (intermediate activity)
CYP2C19	PM	*2/*2 (inactive)

Table1. Phenotypic and Genotypic Profile
IM= Intermediate Metabolizer; PM=Poor Metabolizer

Personalized non (Medication) Advice

- Encourage regular physical activity, hobbies, goal-setting, and social interaction.
- Avoid drugs, minimize alcohol.
- Blood tests: thyroid, vitamins (B6, B12, D, folate), Hb/MCV, creatinine, glucose, AST/ALT, GGT.
- Provide psychoeducation on Autism Spectrum Disorder (ASD).

Personalized Medication Advice

- Escitalopram: max 10 mg/day (≈50% standard dose) due to CYP2C19 poor metabolizer status; drops preferred for precise titration.
  - ➢ If effective → continue 6–12 months.
  - ➢ If not effective → switch to SSRI less dependent on CYP2C19 (fluoxetine, duloxetine, mirtazapine).
- General rule: start low, go slow; maintain dose if response is positive.
- TCAs not recommended as first-line due to side effects.
- Past Medication Considerations:
  - ➢ Glycopyrronium Bromide: no CYP metabolism, but possible psychiatric/GI side effects.
  - ➢ Bupropion: metabolized by CYP2B6; intermediate metabolizer status raises side-effect risk.

Conclusion

- Pharmacogenetics (PGx) tailors treatment to genetic profiles, improving efficacy and reducing side effects.
- Particularly useful for treatment-resistant patients with prior medication failures or adverse effects.
- Further large-scale studies are needed to confirm its clinical impact in psychiatry.

References
R. van Westrhenen, R. van Schaik, T. van Gelder, T. Birkenhager, R Bakker, I. Houwink, P.Bet, W. Hoogendijk, M. van Weelden. Policy and practice review: A First guideline on the use of pharmacogenetics in clinical psychiatry. Frontiers in Pharmacology, 2021 doi.org/10.3389/fphar.2021.640032
R. van Westrhenen, AH. Young AH, U. Heilbronner, JM., M. Ingelman-Sundberg, M. Jukic, J Kaprio, MJH Kas, R. Moldovan, MM. Nöthen, A. Philipsen, N. Shomron, E. Van der Eycken, E. Vieta, TG Schulze, and The PSY-PGx Consortium, PSY-PGx: a new intervention for the implementation of pharmacogenetics in psychiatry.
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