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Treatment of extrapyramidal symptoms in patients treated with antipsychotic drugs

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Extrapyramidal symptoms, for example dyskinesia, parkinsonism, akathisia or dystonia can occur in schizophrenic or schizoaffective patients treated with antipsychotic drugs. Second-generation antipsychotic drugs such as risperidone, olanzapine, quetiapine mostly are D2 and 5-HT_{2A} antagonists and can cause these movement disturbances as a consequence of the D2 receptor blockade. In the mesolimbic system, the prefrontal cortex and the hippocampus, dopamine and serotonin hyperactivity and GABA and glutamate hypoactivity are induced by susceptibility genes found in schizophrenia and schizoaffective disorder. The function of neurotransmitters and neuropeptides in the extrapyramidal system are reviewed. Neural networks in the extrapyramidal system and the mesolimbic system are described. In the extrapyramidal system, the neurotransmitter balance between D2 dopaminergic and muscarinic cholinergic neurons and between presynaptic GABAergic and excitotoxic glutamatergic neurons is altered by the second-generation antipsychotic drugs. Possible treatments of extrapyramidal symptoms induced by antipsychotic drugs are M4 antagonists, GABA_A agonists and NMDA antagonists. The adverse effects of these additional drugs are presented. Some new antipsychotic drugs such as aripiprazole and cariprazine less often and to a lesser extent cause extrapyramidal symptoms, because they have a partial agonism at the D2 receptor.



Recent Publications

1. Werner F M and Covenas R (2017) Extrapyramidal symptoms in patients treated with antipsychotic drugs. *J Bioequiv Availab.* 9:3.
2. Werner F M and Covenas R (2016) Pharmacological options in the treatment of antipsychotic-induced extrapyramidal symptoms. *J Cytol Histol.* 7:2.
3. Werner F M and Covenas R (2015) Classical neurotransmitters and neuropeptides involved in Parkinson's disease: focus on anti-Parkinsonian drugs. *Curr Drug Ther.* 10(2):66-81.
4. Werner F M and Covenas R (2015) New developments in the management of schizophrenia and bipolar disorder: potential use of cariprazine. *Ther Clin Risk Manag.* 11:1657-1661.
5. Werner F M and Covenas R (2014) Safety of antipsychotic drugs: focus on therapeutic and adverse effects. *Exp Opin Drug Saf.* 13:1031-1042.

Biography

Felix-Martin Werner studied Medicine at the University of Bonn. He has been working as a Medical Teacher in the formation of Geriatric Nurses, Occupational Therapists and Assistants of Medical Doctors at the Euro Academy in Pößneck since 1999. He has been doing scientific work at the Institute of Neurosciences of Castilla and León in Salamanca in Spain since 2002. With Professor Rafael Coveñas, he assisted over 30 national and nine international congresses and published over 40 reviews about neural networks in neurological and psychiatric diseases. Since 2014, he has been serving the Editorial Board of the *Journal of Cytology and Histology*.

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