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Therapeutic effect of novel antidepressant drugs interfering with receptors of neurotransmitters and neuropeptides

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Abstract

Major depression is a frequent psychiatric disease, which is mainly treated by different antidepressant drugs. However, one third of the depressive patients remain treatment-resistant. In major depression, in the brainstem, hippocampus and prefrontal cortex, alterations of neurotransmitters and neuropeptides and the belonging neural networks are updated. Starting from these findings, novel antidepressant drugs and combination of different antidepressant drugs are suggested. In the prefrontal cortex, glutamatergic neurons, which receive a postsynaptic excitatory potential from D2 dopaminergic neurons, exert a presynaptic inhibition upon M1 muscarinic cholinergic neurons via NMDA receptors. Medium spiny GABAergic/somatostatin neurons, which receive projections from M1 muscarinic cholinergic neurons, presynaptically inhibit D2 dopaminergic neurons via GABAA/somatostatin1 receptors. The combination of an NMDA receptor antagonist, for example ketamine with an M1 muscarinic cholinergic receptor antagonist, for example scopolamine, exert a rapid, long-lasting antidepressant effect. In preclinical studies, the antidepressant effect of orvepitant, an NK1 receptor antagonist, has been demonstrated: this antagonist reaches a complete antagonism of NK1 receptors. In clinical studies, the combination of an NMDA receptor antagonist with an M1 muscarinic cholinergic receptor antagonist should be investigated indepth as well as the therapeutic effect of orvepitant. In clinical studies, the antidepressant effect of a triple reuptake inhibitor should be examined and compared to current antidepressant drugs. The superior therapeutic effect of antidepressant drugs like venlafaxine, a selective noradrenaline and serotonin reuptake inhibitor and bupropion, a selective dopamine and nordrenaline reuptake inhibitor and their adverse effects will be pointed out. Non-pharmacological measures to enhance the antidepressant effect will also be discussed.

Biography:

Felix-Martin Werner studied human medicine at the University of Bonn. He has been working as a medical teacher in the formation of geriatric nurses, occupational therapists and assistents of the medical doctor at the Euro Academy in Pößneck since 1999. He has been doing scientific work at the Institute of Neurosciences of Castilla and León (INCYL) in Salamanca (Spain) since 2002. With Rafael Coveñas, he has assisted at over 30 national and 12 international congresses of neurology and published over 40 reviews about neural networks in neurological and psychiatric diseases. Since 2014, he has been the member of editorial board of the Journal of Cytology and Histology.

Speaker Publications:

1. "Classical neurotransmitters and neuropeptides involved in generalized epilepsy in a multi-neurotransmitter system: How to improve the antiepileptic effect? Epilepsy Behav. Volume 71, Part B, June 2017, Pages 124-129
2. "Neural networks in neurological and psychiatric diseases"; Current Pharmaceutical Design/ Volume 25, Issue 4, 2019, Pages 374-375
3. "Risperidone: A commentary on drug profiling"; Current Drug Discovery Technologies/ Volume 16, Issue 3, 2019, Pages 315-316.
4. "Comparison of mono-dopaminergic and multi-target pharmacotherapies in primary parkinson syndrome and assessment tools to evaluate motor and non-motor symptoms"; Current Drug Therapy/ Volume 14, Issue 2, 2019, Pages 124-134

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