Abstract

Ketamine is used as an anaesthetic mainly in veterinary medicine and paediatrics. Thirteen years ago, interest in ketamine as an antidepressant emerged. Ketamine as an antidepressant works rapidly and is also effective in the case of patients suffering from treatment resistant depression.The main disadvantage of ketamine as an antidepressant is its psychotomimetic effect.

Ketamine is an antagonist of the NMDA receptor, which has an important influence in brain activity. Through antagonism of this receptor, a large amount of processes can be affected, for example levels of glutamate, excitotoxicity, or density of other receptors. In addition, ketamine probably also affects the D2 receptors, but its role in this is uncertain. Ketamine influences synaptic plasticity and its effect can be modulated by repeated application, co-application with other drugs and other methods. Also gender seems to play role in the effect of ketamine.

The aim of this work is to summarise possible mechanisms of effect of ketamine, its effect on synaptic plasticity and also possibilities of modulation of its effect. This thesis mentions the most important studies concerning ketamine as an antidepressant and possible future directions of research.

Keywords: major depressive disorder, ketamine, antidepressant, NMDA antagonism, glutamatergic transmission, synaptic plasticity