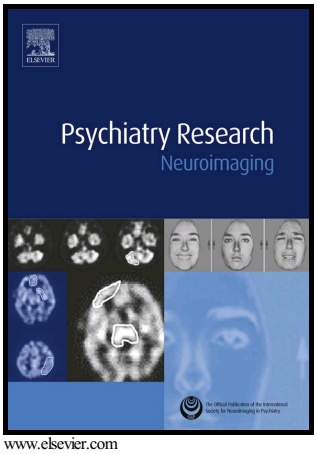

Multiprobe molecular imaging of an NMDA receptor hypofunction rat model for glutamatergic dysfunction

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MULTIPROBE MOLECULAR IMAGING OF AN NMDA RECEPTOR HYPOFUNCTION RAT MODEL FOR GLUTAMATERGIC DYSFUNCTION

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Abstract

There are many indications of a connection between abnormal glutamate transmission through N-methyl-D-aspartate (NMDA) receptor hypofunction and the occurrence of schizophrenia. The importance of metabotropic glutamate receptor subtype 5 (mGluR5) became generally recognized due to its physical link through anchor proteins with NMDAR. Neuroinflammation as well as the kynurenine (tryptophan catabolite; TRYCAT) pathway are equally considered as major contributors to the pathology.

We aimed to investigate this interplay between glutamate release, neuronal activation and inflammatory markers, by using small-animal positron emission tomography (PET) in a rat model known to induce schizophrenia-like symptoms.

Daily intraperitoneal injection of MK801 or saline were administered to induce the model together with N-Acetyl-cysteine (NAc) or saline as the treatment in 24 male Sprague Dawley rats for one month. Biweekly *in vivo* [^{11}C]-ABP688 microPET was performed together with mGluR5 immunohistochemistry. Simultaneously, weekly *in vivo* [^{18}F]-FDG microPET imaging data for glucose metabolism was acquired and microglial activation was investigated with