

A study on the Trazodone in the treatment of the psychogenic erectile dysfunction using fMRI

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Introduction: Functional brain imaging using selective drug probes offers the opportunity to investigate regional neuronal activation linked to receptor stimulation or inhibition, and it offers one approach to detect the distribution and density of neurotransmitter of the 5-HT receptors and uptake sites and to investigate the mechanism of action of the drugs in the clinical application. In this article, we will discuss about the effect of the trazodone in modulating 5-HT receptors by using fMRI.

Objectives: To investigate the central nervous system mechanism of action of Trazodone for the psychogenic erectile dysfunction, and to explore the possible distribution and density of neurotransmitter of the 5-HT receptors and uptake sites by fMRI.

Method and Materials: Participants were twenty-four patients (mean age 29 years) with psychogenic erectile dysfunction and twelve sexually potent volunteers (mean age 30 years) with no history of sexual function disorder, physical, psychiatric or neurological disease. The twelve potent volunteers were as Group A. The twenty-four patients with psychogenic erectile dysfunction were divided into Groups B (treated with Trazodone) and Groups C (treated with placebo), with twelve patients in each groups, following a randomized, single blind design. The Groups A was performed with fMRI only once, while Group B and Group C were performed with a 7-week interval. Before the treatment, all the participants take nothing before fMRI acquisition. After treatment of 7 weeks, 60 minutes before fMRI acquisition, the Group B take trazodone 100 mg, the Group C take the placebo 100 mg, All the patients were assessed with fMRI using the stimulation with movie sequences of neutral and erotic contents.

Results: 1. Before the treatment, in comparison with the Groups A, the patients in the Groups B and Groups C demonstrated a significant and extended activation in the bilateral anterior cingulate cortex ($p < 0.001$) and showed smaller brain activations in the bilateral hippocampus ($p < 0.05$); **2.** By the evaluation of the clinical diagnosis, there were 10 patients in the Group B had a better curative effect, there was no one in the Group C who felt better than before; **3.** After the treatment, among the patients in the Group B who had a better curative effect, the activation of the bilateral anterior cingulate cortex ($p < 0.001$) and bilateral insula gyrus ($p < 0.05$) was inhibited, but activation of the bilateral hippocampus was more evident and extensive than before treatment ($p < 0.05$), that was similar to the one seen in the picture in the Group A except that the bilateral insula gyrus activation were lower. There were not any change of the activated neural systems of the brain of both the Group A and Group C compared with the before treatment with placebo.

Conclusions: Anterior cingulate cortex, insula gyrus and the hippocampus are rich in 5-HT receptors, Trazodone significantly modulate the biological activity of the anterior cingulate cortex, insula gyrus and the hippocampus of the patients with psychogenic erectile dysfunction, bilaterally, and the effect of the trazodone in modulating the different subtype 5-HT receptors is polyphenic.