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AREA-SPECIFIC OCCUPANCY OF THE SEROTONIN TRANSPORTER BY
ESCITALOPRAM AND CITALOPRAM IN MAJOR DEPRESSIVE DISORDER

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Introduction: The serotonin transporter (SERT) occupancy after long-term antidepressant treatment (steady-state) at minimum clinical doses has been reported to be approximately 80% (e.g., Meyer 2007, *J.Psychiatry Neurosci*;32(2):86-102, review). However, this value is mostly calculated in the striatum, therefore the occupancy values in other brain areas might be better associated to clinical parameters.

Objectives: To compare the SERT occupancy of the striatum to occupancy values in six other brain areas.

Methods: 18 patients with major depressive disorder (MDD) received either escitalpram (10mg/d) or citalopram (20mg/d) in a double-blind, longitudinal study. They underwent three PET scans using the radioligand [¹¹C]DASB: PET1 baseline, PET2 six hours after the first drug intake and PET3 after three weeks of treatment. Occupancy of SERT at PET3 was analyzed in seven regions partly associated with alterations in MDD: striatum, subgenual part of the anterior cingulate cortex (sgACC), ACC, amygdala, inferior frontal cortex (IFC), superior frontal cortex (SFC), superior parietal cortex (SPC). ROI-based quantification was performed in PMOD.

Results: There was a huge range in occupancy values of different areas: amygdala (93.5%±6.9%, mean±SD), SPC (90.8%±8.0%), ACC (86.0%±13.2%), sgACC (79.1%±23.6%), striatum (78.8%±4.9%), SPF (64.0%±26.4%), IFC (54.4%±21.7%). We found significant differences in occupancy values between striatum and the ACC, amygdala, IFC, SFC, SPC (t-test, p< 0.05).

Conclusions: In this study we show significant differences in SERT occupancy between brain areas ranging between 54.4% and 93.5%. According to the area-specific effects of changes in serotonergic neurotransmission, regional occupancy values, especially in limbic areas, might be considered in the association to clinical response.