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THE INVOLVEMENT OF BDNF IN PATHOGENESIS AND TREATMENT OF DEPRESSION

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Aims: Data suggest the involvement of monoaminergic and neurotrophic systems in the pathogenesis and treatment major depressive disorder (MDD). We are particularly interested in their interaction, and therefore studied monoaminergic mechanisms in a series of functional imaging studies using positron emission tomography (PET).

Methods: Patients with a history of severe trauma and a diagnosis of posttraumatic stress disorder (PTSD) with and without a co-morbid diagnosis of MDD, patients with a diagnosis of MDD and PTSD alone and healthy control with and without a history of severe trauma were studied. Selective radiotracers for the serotonin 1B receptor subtype, the serotonin transporter and the norepinephrine transporter were synthesized using GE's FXC module and/or Bioscan's AutoLoop by methylation with C-11 methyl triflate or C-11 methyl iodide, respectively. Following a transmission scan, the radiotracers were injected by pump over one min and high resolution research tomography (HRRT) list mode data were acquired for 120 min on a HRRT. A summed image was created and registered to the subject's T1-weighted MR images, which, in turn, were registered to an MR template.

Results: We found evidence for distinctly different neurobiological mechanisms in patients with MDD and PTSD relative to patients with only one diagnosis.

Conclusions: Our data suggest biological endophenotypes for co-morbid PTSD and MDD which will not only support further research on the neurobiological systems that implement the psychopathology, but may stimulate translational research to develop preventive or treatment interventions for co-morbid patients.