

The Relationship Between Vegetative Nervous System Tonus On Mobilization of Hematopoietic Stem and Progenitor Cells in Patients with Acute Psychotic or Anxiety Disorders.

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Background: It is well known that hematopoietic stem/progenitor cells (HSPCs) circulate under steady-state conditions at detectable levels in peripheral blood (PB), with their numbers increasing in response to stress, inflammation, and tissue and organ injury. Tonus of vegetative nervous system regulates mobilization of HSPCs into PB.

Aim of the study: To assess the relationship between catecholamines concentration in PB and levels of circulating HSPCs in patients suffering from acute psychosis and anxiety disorders.

Material and Methods: We enrolled 30 unrelated individuals with the first-episode psychosis and 30 patients suffering from acute anxiety disorders, and 35 ethnic- and gender-matched healthy volunteers. Mobilization of HSPCs was evaluated by 1) FACS to enumerate the number of stem cells in PB, 2) functional in vitro assays to detect the number of CFU-GM and BFU-E clonogenic progenitors circulating in PB. In parallel we measured level of adrenaline, norepinephrine (NE) and dopamine in PB serum.

Results: We did not observe any significant differences in the numbers of circulating stem cells, as well as clonogenic BFU-E and CFU-GM between normal controls and psychotic patients and patients with anxiety disorders. In particular number of circulating in PB HSPCs was not affected by increased level of adrenaline, norepinephrine and dopamine in patients with psychosis.

Conclusion: Our data argue against an effect of enhanced vegetative nervous system tone on the number of HSPCs circulating in PB in humans.