Major Depressive Disorder in the 21st Century: From Psychobiology to Neuroscience

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Depression is now recognized as a disorder with high societal costs and a recurring and often chronic pattern. Emerging evidence supports the benefits of early detection, complete resolution of symptoms and prolonged treatment as prerequisites for a better outcome.

Until recently it was difficult to link findings about adverse life experiences and "stress" to biological substrates for depression. Following reports of neuroanatomical localization of depression in patients with stroke disease and other neurological disorders, Positron Emission Tomography (PET) and other neuroimaging techniques have provided the technology to map out a "depression circuit" and to identify anatomical changes that correlate with chronicity of depression. The discovery that antidepressants have the ability to reverse stress induced inhibition of neurogenesis in brain cells, particularly in the hypothalamus is a key finding in linking stress biology, neuroanatomy and psychopharmacology.

The SSRI antidepressants represent a significant advance in managing patients with major depressive disorder. Yet less than 50% of patients achieve a full recovery and are at substantial risk for relapse. Clinicians can apply an evidence-based approach to using existing agents, including augmentation and combination strategies. New drug developments include the search for safe and effective corticotrophin releasing factor (CRF), glutamate receptor (MGlur) or neurokinin (NK) receptor antagonists. Other physical treatments including magnetic and Vagus Nerve Stimulation (VNS) are also being evaluated in treatment of refractory depression.