sleep with a desinhibition of rapid-eye-movement (REM)-sleep and a decrease in slow-wave-sleep (SWS). As Dr. Murck will present, there is evidence that an overactivity of glutamatergic and decline of GABAergic neurotransmission is involved in these phenomena. Moreover total sleep deprivation, having an antidepressive efficacy, seems to act at these systems. Dr. Antonijevic will then focus on the importance of gender differences in sleep endocrine regulation with regard to depression. An involvement of the GABAergic system will be discussed. The sleep-EEG findings will lead to the assumption of changes in the polarisation level of thalamocortical cells, which might be related to the action of the Na-K-ATPase. The involvement of this enzyme in the pathophysiology of depression, particularly as it relates to bipolar illness, is summarized by Dr. El Mallakh. As the Na-K-ATPase is also involved in the reuptake of glutamate and GABA changes in the activity of this enzyme could be involved in the dysregulation of both neurotransmitter systems. Evidence for the NMDA receptor as a target for commonly used antidepressive substances from binding studies and the efficacy of NMDA receptor antagonist in animal models of depression will be presented by Dr. Skolnick. Arguments for the importance of the GABAergic system in the pathophysiology of depression are presented by Dr. Petty showing data from animal models, from clinical and genetic studies, and the usefulness of GABAergic agents as antidepressant medication.

8. NUTS AND BOLTS MAGNETIC RESONANCE SPECTROSCOPY: A GUIDE TO QUANTITATIVE MEASUREMENT OF CEREBRAL NEUROCHEMISTRY


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Magnetic Resonance Spectroscopy (MRS) has emerged as a powerful tool for in vivo measurement of cerebral neurochemistry. Recent advances in MRS technology and their subsequent automation have enabled this technology to become widely available at most medical centers. The goal of this workshop is to provide a nuts and bolts guide which will enable investigators with new access to MRS technology to acquire, analyze, and quantitate MRS data. The attendee of the workshop will be guided through each step of the process necessary to obtain quantitative MRS measurements of cerebral neurochemistry for research investigations. Topics to be addressed in this workshop include goal oriented pulse sequence and parameter choices, spectral fitting techniques, voxel tissue segmentation, and neurochemical quantitation. In addition, participants will be taught strategies to avoid common MRS pitfalls and to recognize artifacts in their MRS data. This will be followed by a panelist discussion and subsequent audience question/answer session on the limitations and potential of MRS technology. Participants will be provided with a brief “nuts and bolts guide” and a list of commercial and public domain software tools available for the analysis of MRS data.

9. NEUROCHEMICAL BRAIN IMAGING FINDINGS IN MOOD DISORDERS

J.C. Soares (1), R.B. Innis (2), P. Renshaw (3), A. Anand (2), W. Drevets (1)

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Linked to developments in the methodologies for in vivo neurochemical brain imaging studies, important new possibilities for investigations on the pathophysiology of neuropsychiatric disorders have become available. These methodologies have in recent years been applied to studies in mood disorders. This workshop will include leading investigators in this area, who will review recent advances in this field, and perspectives for future developments. Dr. Renshaw will discuss new magnetic resonance spectroscopy (MRS) studies that examine brain adenosine metabolism in affective disorder patients. Dr. Soares will present results from ongoing studies that utilize 1H MRS and 7Li MRS to study in vivo brain neurochemistry and the pharmacokinetics of lithium as related to the pathophysiology of bipolar disorder, and the mechanisms of action of lithium. Dr. Anand will review his most recent findings from investigations that examine the role of the dopaminergic system in the pathophysiology of mood disorders. Dr. Drevets will discuss his findings from ongoing PET studies of the SHT1A system in unipolars and bipolar disorder individuals. Last, Dr. Innis will moderate a discussion centered on the specific presentations, on related methodological issues, and on possibilities for future developments. Overall, the workshop should provide invaluable new information regarding in vivo applications of neurochemical brain imaging methods to investigate the pathophysiology of mood disorders. It should be a very useful source of new information in this area for researchers working on this field and related ones.

The Interaction Between the Immune System and Psychiatric Disorders

Thursday, May 11, 12:15 PM–2:15 PM
Location: Water Tower
Chair: Mark H. Rapaport
Co-Chair: Cheryl M. Wong