generation, STROOP, Autobiographical Memory Interview) were assessed at baseline, after six ECT and at the end of the ECT course.
Results: The study is in progress and preliminary results (mood, neuropsychological function, seizure indexes) will be presented.
Conclusions: All four forms of ECT appear effective, but preliminary results suggest some forms may be advantageous in terms of a lower rate of cognitive side-effects. There is evidence for the clinical use of bifrontal ECT. Ultrabrief unilateral ECT may hold great promise for the future.

07-02

TMS treatment for depression: overview of efficacy and report on a sham-controlled trial of twice daily left prefrontal rTMS

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Background: The majority of clinical trials have reported positive statistical results for repetitive transcranial magnetic stimulation (rTMS) (compared with a sham control) in treating depression, but the results of many studies were not clinically impressive. Recent studies have explored strategies to optimize the efficacy of rTMS. One such strategy is to increase the frequency of treatment sessions. The efficacy of twice-daily sessions of rTMS has not been previously examined in sham-controlled trials.
Methods: Thirty-eight subjects with DSM-IV major depressive episode were randomly assigned to receive active or sham rTMS for 2 weeks, with two treatment sessions per weekday. Treatment was given to the left prefrontal cortex at 10 Hz, 30 trains of 5 s, 110% motor threshold. Subjects were allowed to receive up to 6 weeks of active daily rTMS in an open extension. Mood and cognitive functioning were assessed weekly during the study.
Results: The active treatment group improved more than the sham treatment group over the 2-week sham-controlled period on Montgomery-Asberg Depression Rating Scale (MADRS) ($P < 0.05$) but not Hamilton Depression Rating scales. After 6 weeks of active treatment, 53% and 47% of subjects achieved response (≥50% improvement) and remission (MADRS ≤10), respectively. rTMS was well tolerated.
Conclusion: High-frequency left prefrontal rTMS given twice a day was safe and more effective than sham in treating depression.

07-03

Vagus nerve stimulation for treatment-resistant depression: utility and possible mechanisms of action

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Early clinical observations and subsequent prospective studies indicated that vagus nerve stimulation (VNS) had the potential to improve mood in patients with epilepsy. Subsequent studies have evaluated the effect of VNS in treatment-resistant major depression. These initial studies indicate a significant short- and long-term benefit of VNS on mood. Although the precise mechanisms underlying the antidepressant effect of VNS remain obscure, there is emerging evidence that VNS is associated with alteration of cerebrospinal fluid concentrations of various neurotransmitters. Furthermore, VNS impacts on functional activity of brain areas within the limbic system. This presentation will review the evidence for VNS as an antidepressant treatment and will review the potential neurobiological correlates of this effect. This will be compared with data from other brain stimulation approaches to treatment of depression. The implications of VNS for our understanding of functional models of depression will be discussed.

07-04

Direct current and deep brain stimulation with lessons from neurosurgery

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Neurosurgery for mental disorders (NMS) antedates pharmacotherapy and brain stimulation and arguably

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informed the development of modern physical treatments for psychiatric disorders, in particular depression (Malhi et al. Neuropsychiatric Dis Treatment 2006, 2 165–179). We describe a study of direct current stimulation for the clinical treatment of depression and its neurobiological effects as measured electrophysiologically, in a pilot study conducted at the Black Dog Institute. Transcranial direct current stimulation (tDCS) is a noninvasive technique in which a weak direct current is applied across the scalp to alter the excitability of juxtaposed cortical tissue. The effects on neuronal membranes and neurotransmission persist beyond the periods of stimulation and can be measured using quantitative EEG. Preliminary findings from seven subjects will be presented and the putative mechanism of action discussed. In addition, the literature pertaining to this field will be reviewed with reference to current research in tDCS and emergent findings from modern deep brain stimulation and neurosurgical interventions (Dalgleish et al. Am J Psychiatry 2004, 161 1913–1916).

Different Approaches to Endophenotypes in Schizophrenia

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Overview

The concept that schizophrenia is a grouping of, rather than a single illness, is well accepted. However, it is seldom explored and rarely taken into account when investigating the disorder. This symposium is structured to give a snapshot of different concepts of endophenotypes, starting with those arising from basic research, progressing to an endophenotype associated with a purported risk factor for schizophrenia. We then move into the clinical setting, addressing whether or not testing paradigms define discrete groupings of altered functionality. The symposium ends with a presentation on endophenotypes defined by cognitive testing and the genetic aspect of such deficits.

08-01

Neurochemical endophenotypes of schizophrenia

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A major problem for investigators in the field of schizophrenia research is the difficulty of producing unambiguous results because, at least in part, of schizophrenia being a syndrome comprising of a number of disorders, which all present clinically with similar clusters of symptoms. The symptoms of schizophrenia can be categorized into three clusters: 1) positive symptoms (an excess or distortion of normal functions), 2) negative symptoms (the diminution or loss of normal functions) and 3) cognitive symptoms (deficits in attention, concentration and memory) (American Psychiatric Association, Diagnostic and Statistical Manual of Mental Disorders 2000). The heterogeneity of the schizophrenia syndrome ordains that studies on the disorder generate data that have a 'decreased signal to noise ratio' (Hallmayer et al. Am J Hum Genet 2005, 77 468–476). That is to say, studying the biochemical indexes of a group of disorders gives a less clear outcome than would be obtained by studying a single disorder. It has now been shown that investigating specific phenotypes in the schizophrenia syndrome and comparing results across phenotypes within the syndrome, as well as to those from control subjects, enhances the potential of identifying specific pathogenetic mechanisms (Hallmayer et al. Am J Hum Genet 2005, 77 468–476). We now use this approach of using endophenotypes to increase the capacity of our postmortem research to detect the biological abnormalities that underlie the schizophrenia syndrome.

08-02

Identifying Disease-specific Protein Expression Patterns Within the Syndrome of Schizophrenia

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While schizophrenia has long been recognized as a syndrome, no strong biological basis for segregating the diseases within that syndrome has been elucidated. One of the defining outcomes of disease is changes in the biochemical pathways affected by the disorder. Such changes would be predicted to alter levels of critical proteins in these disease-specific pathway changes. Two-dimensional (2D) electrophoresis now provides the opportunity to identify changes in the levels of multiple proteins in complex biological symptoms and therefore offers the opportunity to identify disease-specific protein footprints in tissue affected by different diseases. This approach has

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