



**THE BRITISH NEUROPSYCHIATRY ASSOCIATION  
ANNUAL MEETING 2000**

**ABSTRACTS**

**13 February**

***THE SOCIAL BRAIN***

**14 February**

***NEUROPSYCHIATRIC ASPECTS OF EPILEPSY***

**at**

**The Royal Society, London**

## **How primates learn novel complex skills: the evolutionary origins of generative planning?**

**Richard W Byrne**

Among the primates, neocortex size increases with overall brain size, and deviations from this relationship are closely associated with usage of social manipulation under natural circumstances: species that rely heavily on manipulative tactics are just those with unusually large neocortical areas. Moreover, investment in neocortex is also associated with the species-typical group size. These facts support the theory that, among primates, semi-permanent group living has selected for increased neocortex size, an effect mediated by the increased need to use subtle, social tactics to obtain resources without the socially disruptive effects of direct power contests. If the sort of behaviour we recognize as intelligent is linked with the neocortex, then the intelligence of monkeys and apes and to some extent, humans has been driven by demands for social skill.

Great apes have long been considered to display more human-like behaviour than monkeys, and in recent years attention has particularly focused on their abilities in responding appropriately to the mental states of others warning only the naive, following only the informed, teaching only the ignorant, and so on. Though limited compared with even young humans, some theory of mind in great apes but not monkeys is evidenced by a number of reliable signs. However, great apes do not live in environments that are socially more challenging than those of monkeys, so any cognitive superiority of great apes needs additional explanation. In the domain of feeding, however, great apes do face more challenging environmental pressures than monkeys. Apes large size and specialized locomotion impose greater locomotor costs, their digestion is less able to cope with unripe fruit, and yet they face competition from the more efficient monkeys throughout their world range. That they have survived at all shows they possess some compensatory advantage, and I will suggest in this talk that it lies in their ability to develop novel, skilful programs of manual action thus making available to them foods that monkeys cannot process.

Prosimians and monkeys use food-handling techniques that are either species-typical actions, or unsystematic and stimulus-driven. Great apes, in several domains, have shown the ability to develop systematic, multi-stage processes, involving deft co-ordination between the two hands and between independently-controlled fingers of the same hand, processes which are flexible and hierarchically organized. These characteristics show the rudiments of generative planning: pre-existing routines can be used as components, with appropriate co-ordination, in building novel programs of manual action. Furthermore, there is evidence that great apes acquire these processes partly by program-level imitation of skilled practitioners: at least the organization of a process is learnt by observation, although the details are most likely discovered individually. To work out the planning structure that underlies fluid behaviour requires that the behaviour be segmented into units, and then that the statistical regularities of strings of these units be detected as clues to the organization lying behind the behaviour great apes must be able to parse visible actions. (Some suggestions as to neural systems capable of performing these component processes can already be made.)

This talk will therefore argue that great apes possess a sophisticated array of cognitive processes for understanding and constructing hierarchical programs of skilled motor action. These may in turn have formed the building blocks of the much more abstract uses of generative planning in humans, and in particular, language.

## **Recognition of emotion after brain injury**

**Andy Young**

Studies of recognition of facial expressions of emotion after brain injury have revealed two forms of strikingly selective impairment. In the first form, the recognition of fear is especially severely affected, but there are also difficulties in recognising anger. In the second form, recognition of disgust is especially poor. Research using functional imaging techniques to investigate responses to facial expressions in the neurologically normal brain has confirmed differences between fear and disgust, and identified regions consistent with the neuropsychological findings.

I will describe this work and some recent studies which have looked at the issue of whether the neural pathways concerned are specifically involved in the recognition of facial expressions of emotion, or are involved in recognition of certain emotions regardless of the domain through which these are expressed (i.e. by face, voice, posture, etc).

## **Brain Imaging Studies of ‘Theory of Mind’**

### **Professor Uta Frith**

A number of functional neuro-imaging studies now exist where volunteers are scanned while engaged in tasks that require ‘Theory of Mind’ or ‘mentalising’ skills. These studies contrast mentalising conditions with other conditions where socially relevant stimuli have to be processed, but where the attribution of mental states is not required to understand the task. The tasks used can be grouped into those using verbal material, visual material depicting human interactions and visual material that elicits mental state attribution purely by movement patterns. The results show remarkable convergence, indicating activations in a neural system that includes the medial prefrontal gyrus, and temporal parietal junction.

The functional role of the neural system implicated in the majority of mentalising studies can be clarified by examining activations in studies that did not directly involve a mentalising component. The imaging studies which have also shown activations in medial prefrontal regions together with the temporal parietal junction have implicated the perception of biological motion (moving hands, lips), and certain linguistic stimuli, such as metaphors. In addition these regions are activated when monitoring one’s own mental states, for instance when monitoring actions, reporting emotions, or reporting degrees of pain or tickling sensation. All these regions appear to contribute to the processing of own and other’s intentions. We tentatively speculate that ‘Theory of Mind’, the ability to attribute mental states to self and others, has evolved from the ability to make inferences about actions and movements.

## **Schizophrenia is (not simply) a neurodevelopmental disorder**

### **Professor Robin Murray**

For the past twenty five years, research into schizophrenia has focused on elucidating brain abnormalities, initially of structure and latterly of function. A consensus has been reached that people with schizophrenia have, on average, larger lateral and third ventricles, and a slight decrease in the volume of the cerebral cortex as well as that of the temporal lobes and hippocampi. Many consider that these deviations have a neurodevelopmental origin; unfortunately, few of the histological reports cited by the originators of the neurodevelopmental hypothesis have been confirmed though interesting new findings have appeared. Nevertheless, epidemiological studies have conclusively demonstrated a modest association between schizophrenia and obstetric hazards, as well as minor physical, cognitive and behavioural deviations in children who later go on to develop schizophrenia.

Family studies have demonstrated a) a major genetic component to schizophrenia; b) no single gene exists which increases the risk of schizophrenia more than threefold - a number of genes must be involved; c) relatives of schizophrenics show minor variants of some of the deviations found in schizophrenia patients (eg increased lateral ventricular volume). Twin studies have suggested that although part of the genetic predisposition to schizophrenia operates via developmental mechanisms another component is shared with mania. Epidemiological studies have implicated, in addition to risk factors operating early in life, the operation of late risk factors such as immigration, drug abuse (especially cannabis in the UK), and adverse life events.

Thus, it is clear that while there is a neurodevelopmental component to schizophrenia, it is not the whole story. One fashionable solution is to revert to previously discredited ideas that schizophrenia is a degenerative disorder. However, since follow-up studies of first onset psychotic patients have generally shown static or improving cognitive function, we are asked to believe that the schizophrenic “process” causes brain degeneration without accompanying cognitive deterioration, an unlikely scenario.

The alternative view is to regard schizophrenia as a multifactorial condition like diabetes or coronary artery disease, and to see it as resulting from the cumulative operation of a number of risk factors, some but not all of which are neurodevelopmental. Such a view posits that some individuals inherit a number of slightly deviant traits each of which is not uncommon in the general population but which together render them vulnerable to schizophrenia. This genetic vulnerability may be compounded by early insults to the developing brain. As a result the child shows slight developmental delays, minor cognitive difficulties and social anxiety. These set the child apart from his/her peers and the reactions of the latter compound the situation. The child develops on an increasingly deviant social trajectory,

and finally, stresses an adolescence or early adult life such as drug abuse and social adversity push the individual over the threshold to the expression of frank psychosis. Such a view predicts that no large biological abnormalities will be found in schizophrenia - rather the minor deviations found are risk factors for the condition, not consequences of a single pathological disease process.

### **Specific deficits in orbit frontal function in patients with mild frontal variant frontotemporal dementia.**

**Rahman, S, Sahakian, BJ, Hodges, JR, Rogers, RD, Robbins, TW.**

Eight patients with relatively mild frontal variant frontotemporal dementia were compared with age- and IQ-matched control volunteers on tests of executive and mnemonic function. These patients demonstrated deficits in tests sensitive to ventromedial or orbitofrontal function: in a decision-making paradigm and in a visual discrimination learning paradigm specific to the reversal stages. However, they demonstrated virtually no deficits in other tests including those which have been shown to be sensitive to lateral prefrontal function, such as the spatial working memory and planning tasks. Given the profile of these cognitive deficits, we postulate that relatively early in the disease the ventromedial or orbitofrontal cortex is a major locus of dysfunction. This may relate to the behavioural presentation of these patients clinically.

### **Social cognition in frontotemporal dementia**

**Carol Gregory, Valerie Stone, Sinclair Lough, John Hodges & Simon Baron-Cohen**

Frontal variant fronto temporal dementia (fv FTD) patients often appear insensitive to the emotional state of others. Carers of these patients report interpersonal difficulties reminiscent of the theory of mind deficits in patients with autism. This study gave a range of developmental tests to a group of 10 patients with fv (FTD) to examine aspects of social cognition. These tests included assessments of patients ability to assess socially appropriate behaviour, ability to identify the emotional state of others, and first and second order belief tests of theory of mind. Patients showed deficits in some areas of these tests providing interesting initial data regarding deficits in social cognition in this group of patients.

### **The Independence Of Theory Of Mind And Executive Functions: A Case Of Asperger's Syndrome Following Congenital Amygdala Damage.**

**C Fine, J Lumsden, R J R Blair**

We present findings from a patient, BM, with congenital unilateral left amygdala damage and who developed Asperger's Syndrome. In line with his diagnosis, BM showed severe difficulty on tasks assessing Theory of Mind. However, in contrast to models suggesting that Theory of Mind can be reduced to executive functioning, he presented with normal executive function development.

### **Depersonalization Disorder: Thinking Without Feeling**

**Phillips, M.L., Medford, N., Senior, C., Bullmore, E.T., Brammer, M.J., Andrew, C., Sierra, M., Williams, S.C.R., David. A.S.**

Emotional detachment from the environment occurs frequently in depersonalization. Using functional magnetic resonance imaging, depersonalized patients (n=6), patients with obsessive compulsive disorder (n=10), and normals (n=6) were scanned whilst viewing standardised aversive and neutral scenes, rated afterwards for emotional content. In all controls, aversive scenes activated occipital and inferior temporal cortices, and the insula, implicated in disgust perception (1). Depersonalized patients rated aversive scenes as significantly less emotive than controls, showed increased activation in inferior frontal lobe, but insula activation only to neutral scenes. Depersonalization may result from inhibition of emotion-sensitive regions by those associated with emotion interpretation and control.

## **Autonomic Response in Depersonalisation**

**Sierra-Siegert M, Senior C, Dalton J, Phillips M, Bond A, David T.**

The skin conductance response (SCR) of 15 patients with chronic, DSM-IV depersonalisation disorder, and 14 age and sex-matched normal controls was recorded in response to non-specific elicitors of SCR (unexpected clap and taking a sigh); and 15 randomised pictures with different emotional valence: 5 Neutral, 5 Pleasant, 5 Unpleasant.

SCRs to the unpleasant pictures was significantly reduced in the depersonalized patients. Also the latency of response to the startling clap was significantly shorter for the patients with depersonalization.

Our findings suggest that patients with depersonalisation are in a heightened state of alertness and that the reduced response to aversive stimuli is due to a selective inhibitory mechanism on emotional processing.

## **Real-Life-Type Problem-Solving and Frontal Lobe Functioning**

**Shelley Channon and Sarah Crawford**

Frontal lobe dysfunction has been associated with executive dysfunction and impaired everyday life problem-solving. The "Predicaments" test was designed to assess real-life-type problem solving using videotaped scenarios covering a range of everyday interpersonal situations. This revealed impairments in people with unilateral anterior

lesions relative to healthy controls. Adults with " syndrome also showed impaired performance on aspects of the Predicaments test, and on some of the more abstract executive tests given. The implications for our understanding of impairments in everyday life problem-solving will be considered.

## **Thalamus in Schizophrenia: An in Vivo Neuropathological Study using Magnetisation Transfer Imaging (MTI)**

**M.S. Bagary, J. Foong, M. Maier, G.J.Barker, D.H.Miller and M.A. Ron**

The thalamus plays a key role in attention and information processing. Abnormalities in thalamic circuits may explain schizophrenic symptoms. Decreased thalamic volume and neuronal loss have been reported in imaging and post-mortem studies.

We used magnetisation transfer ratio (MTR), a magnetic resonance technique sensitive to axonal and myelin integrity to explore, in vivo, the neuropathology of the thalamus in 25 schizophrenics and 25 controls.

The pulvinar and dorsomedial nucleus were selected because of their limbic and prefrontal connections. MTR's for both nuclei were similar in schizophrenics and controls. Our results do not support the presence of thalamic abnormalities in schizophrenia.

## **Motherhood and Memory: Pregnancy may be bad for Hippocampal Health**

**Dr Sallie Baxendale & Dr Matthew Brett**

This paper reviews the literature on intellectual change during and following pregnancy in humans. Whilst much has been written in a n impressionistic way, this area has received little serious scientific attention, and at the end of the twentieth century considerable gaps in our knowledge remain. We present two case studies which suggest, in rare instances, the so called 'benign encephalopathy of pregnancy' may not resolve and can result in long term and possibly irreversible impairment in memory skills. The final part of the discussion draws together findings from wide scientific fields and presents a hypothetical model to explain these memory deficits following childbirth. Whilst this review may generate more questions than it answers, we hope that it will create interest and stimulate research in this long neglected field.

## **Right Frontotemporal Cortex - Social Brain**

**Bruce L. Miller**

Frontotemporal dementia (FTD) is a degenerative brain disorder originally described by Pick. With FTD pathology is localized to the frontal and anterior temporal cortex, often in a highly asymmetric fashion. In many FTD patients there is bilateral frontotemporal dysfunction, while in others FTD selectively attacks the right or left, frontal or temporal regions. Each patient with this disorder serves as a case for understanding the clinical manifestations of a disorder associated with slow selective loss of function in frontotemporal regions. From studies of individuals and groups of FTD patients, profiles of left and right frontal and temporal functions are emerging.

Patients with selective left brain dysfunction present with prominent and progressive language disabilities. Progressive nonfluent aphasia is a feature of the left frontal subgroup. The left frontal subgroup show good awareness of their deficits and often exhibit depression and apathy. Semantic dementia is the clinical syndrome found with selective left anterior temporal degeneration. Work from Hodges, Patterson and colleagues suggests that patients with left anterior temporal beyond exhibiting a simple problem with labelling, patients with semantic dementia lose semantic knowledge regarding the world around them. The social deficits in the left-sided subgroup develop later than those seen in right-sided or bilateral disease. Submissiveness and withdrawal are common.

Patients with Asymmetric right frontal disease exhibit marked behavioural alterations which include, verbal disinhibition, antisocial behaviour, loss of concern for others, and changes in previously established patterns of dress and political ideology. Those with selective right temporal dysfunction exhibit loss of empathy, intensification of political or religious ideas, verbal preoccupation and blunting of emotional feelings. Patients with asymmetric right frontal or temporal degeneration offer a powerful model for understanding the role of these brain regions in social behaviour. The left hemisphere is less competent in the social domain, while the right frontotemporal brain regions are necessary for successful social interaction.

## **The Social Brain - The Link with Epilepsy**

**Prof. C.E. Elger**

The observation of a lack of moral and social skills in two patients with early acquired frontal lesions raised increased interest in the question of the structural and functional relation between certain brain structures and social functioning. The main focus with this issue is on prefrontal and fronto-orbital structures which are assumed to represent central executive functions, planning, and behaviour control (selection and inhibition) as well as on fronto-temporal and temporo-limbic structures which are involved in emotional processing and in basic forms of learning and memory. Whilst full blown personality disorders are mostly observed either in patients with severe and extended lesions or in patients with psychiatric diseases without known morphological correlates, focal epilepsies may be seen as an interface between psychiatry and the neurobiology of social behaviour. Focal epilepsies are preferentially associated with temporal and frontal structures. Their morphological and functional correlates can well be determined and they are mostly confined to very circumscribed regions. Indeed ictal and interictal behaviour of patients with frontal lobe epilepsies indicates problems in executive functions, mental flexibility, and response inhibition. Patients with temporo-mesial lobe epilepsies have problems in declarative (episodic semantic) and procedural memory (classic conditioning) and the perception of emotional stimuli. They furthermore are frequently depressed and display symptoms of anxiety. One can well assume that cognitive and mood disorders result in problems in interpersonal communication, the correct perception of social situations, rule learning, and adequate emotional responses. However, with the exception of single postictal phenomena, the symptoms in epilepsy appear on the lower end of the assumed continuum between social and anti-social behaviour. In the tradition of Lashley this most likely reflects that extended mass lesions or malformations are a prerequisite of strongly deviant behaviour. The social problems which are commonly observed in epilepsy seem stronger determined by the social impact of epilepsies than by brain dysfunction.

## **Pseudoseizures (Non Epileptic Seizures)**

**Tim Betts**

10-20 % of people who carry the pejorative label of being “a known epileptic” in fact do not have epilepsy but have some other attack disorder which has been mistaken for it. Frequent non epileptic seizures are expensive for the National Health Service because patients with the condition may consume large amount of new anti convulsant drugs and have frequent inpatient stays and attendances at Casualty. It is also possible for true epilepsy to be misdiagnosed as some other condition-usually psychiatric.

Recognising that a seizure is non epileptic can be difficult and there is an agreed hierarchy of investigation. Although ancillary investigation will help (such as ictal EEG recording, prolactin levels after a seizure etc..) the diagnosis of epilepsy remains a clinical diagnosis and it is important that, if possible, as much information is collected using various modalities of investigation before a final decision is made in doubtful cases. One of the strongest arguments for the swift review of all patients developing seizures quickly by physicians experienced in the diagnosis of epilepsy is that once the diagnosis has been made of epilepsy, even though it is not true, it is difficult to change it.

Diagnosing a patient as having a pseudo seizure is not enough. There are many different types of non epileptic seizure with different aetiologies. Other organic disease such as syncope is often mistaken for epilepsy but the majority of non epileptic seizures turn out to have an emotional or psychological basis. Hyper-ventilation attacks, panic attacks, post traumatic stress disorder, conversion disorder, dissociation disorder and factitious disorder can all present as non epileptic seizures. Seizures occurring in sleep are often difficult to diagnose and differentiation between sleep disorder and epilepsy occurring during sleep can be difficult. Although it has been said that non epileptic seizures do not occur during sleep, this is not true.

Once the seizure has been correctly diagnosed as non epileptic and once it has been classified, some attempt at treatment can be made. What little evidence there exists about the outcome of treatment of non epileptic seizures is that once they become entrenched they can be very difficult to remove and early recognition and treatment is undoubtedly very important. The real treatment of non epileptic seizures is not to make the erroneous diagnosis in the first place and for the patient to be reviewed quickly by a doctor who knows what he/she is doing.

## **Forced Normalisation and Related Phenomena**

**Professor Michael Trimble**

This presentation will introduce the audience to the fascinating phenomenon of forced normalisation. This was originally described by Landolt in the 1950's, and, partly because most of his writings were in German, was studiously ignored by several generations of neurologists. Landolt observed patients with epilepsy, almost on a daily basis, doing EEG recordings. He was also given new antiepileptic drugs to try out. What he noted was that in some patients, suppression of seizures was accompanied not only by a normalisation of the EEG, but also the development of florid psychotic pictures. The EEG phenomenon became referred to as 'forced normalisation'. In Landolt's own words: 'forced normalisation is the phenomenon characterised by the fact that, with the occurrence of the psychotic states, the EEG becomes more normal or entirely normal as compared with previous and subsequent EEG findings'.

The clinical counterpart of this, where no EEG is available, was referred to by Tellenbach as 'alternative psychosis'. More recently Peter Wolf has suggested that a paradoxical normalisation, to referred to the paradox that when the patient's EEG improves the behaviour deteriorates.

The relevance of forced normalisation for epilepsy at the present time will be noted, with reference to the behaviour side effects of antiepileptic drugs. A number of new compounds, some of which can be quite powerful in switching off epileptic seizures, may be associated with the development of irritability, affective disorders, or even frank psychotic states. The association of this to forced normalisation and related phenomena will be discussed.

### **Social cognition in frontal lobe epilepsy.**

**Corcoran, R; Harris, C. Thompson, P.J. and Baker, G.**

The study explores the performance of people with well-defined frontal lobe epileptic foci on several socio-cognitive tasks. The skills explored include 'theory of mind', social problem solving and conditional reasoning. Performance on these tasks is analysed in relation to the laterality of the focus and is compared to a matched group of 'normal' controls. The data indicates that poor performance on several of the social tasks, and some relevant non-social paradigms, is particularly associated with right prefrontal cortex dysfunction.

The findings will be discussed in relation to relevant neuropsychological models of social cognition and prefrontal function.

### **Temporal Lobe Epilepsy, Paranoid Schizophrenia & Astrocytoma: A Forensic Neuropsychiatric Video Case** **Staufenberg EFA, Lewis S**

A video record and MRI scanning data will serve to discuss a forensic neuropsychiatric case of a single male offender-patient with paranoid schizophrenia, temporal lobe epilepsy and a Grade II Astrocytoma. The patient's neurobehavioral presentation includes maladaptive executive functions, restricted social interaction skills, and a just below average intellectual attainment level.

Offending conduct including sexual assaults, and fire-setting to a medium secure forensic psychiatric service will be reviewed in the light of the complex neuropsychiatric pathology. The particular focus will be on the relationship or otherwise of the epilepsy with the schizophrenic syndrome in the context of the space occupying lesion, and the patient's refusal of neurosurgical interventions.

### **SLE, Seizures and Self-harm**

**Moore BJ, O'Driscoll K, Vinjamuri S, Smith D**

Systemic Lupus Erythematosus (SLE) has protean manifestations in addition to fever fatigue and rash; these include cognitive dysfunction (<75% of patients), psychosis (<30%) and seizures (<20%). It is believed that complex partial seizures (CPS) are a primary manifestation of SLE, with 80% showing left hemisphere abnormalities on EEG. We present a video of a female patient in her own social setting who uncharacteristically self-harmed against a background of unremitting SLE, intractable seizures and complex family dynamics. We suggest that the co-existence of CPS and SLE should routinely give rise to neuropsychiatric assessment.

### **Chasing the Chimera of Unitary Mnemonic Network Disruption in 'Organic' Amnesia: Analysis of a Large FDG-PET Dataset**

**Dr Laurence Reed, P.K. Marsden, N. Stanhope, M.D. Kopelman**

The investigation of Amnesic disorders using FDG-PET promises the identification of common patterns of regional impairment across distinct groups. This may represent a 'chimera' given the variety of pathologies underpinning amnesia. We report FDG-PET findings in 40 patients with organic amnesia due to temporal, diencephalic and frontal lobe pathology. All subjects received neuropsychological assessment, structural MRI and FDG-PET, convergently analysed using ROI and SPM approaches. Each group of subjects showed characteristic patterns of memory, MRI and FDG-PET abnormalities. Principal component analysis of neuropsychological measures identified a 'memory' component showing correlation with regional metabolism in the retrosplenial cortex across all subjects.

## **The Role of Brain Imaging in the Evaluation of Patients with Epilepsy**

### **Professor John S Duncan**

MRI identifies the aetiology in 85% of patients with refractory partial seizures who are candidates for surgical treatment. The proportion of cryptogenic cases will decrease with improvements in MRI. Functional MRI can identify the cerebral areas responsible for specific cognitive processes, and assist planning resections close to eloquent areas. N-acetyl-aspartate (NAA), creatine and choline-containing compounds may be identified using proton magnetic resonance spectroscopy (MRS). Reduction of the ratio of NAA/creatine + choline is a feature of cerebral regions that include epileptic foci. GABA, glutamate and glutamine may be quantified in vivo using MRS, and may lead to a neuro chemical classification of epilepsy syndromes.

Positron emission tomography (PET) may provide data on regional cerebral blood flow (rCBF), glucose metabolism and the binding of specific ligands to receptors. The hallmark of an epileptic focus is an area of reduced glucose metabolism, that is commonly more extensive than the underlying anatomical abnormality. Reduced binding to benzodiazepine receptors (BZR) is commonly seen at an epileptic focus, in a more restricted distribution than an area of hypometabolism. Focal increases in BZR binding have been demonstrated in malformations.

Dynamic PET studies may demonstrate neuro transmitter release in vivo, identifying specific pathways and networks that are involved in cognitive tasks and seizures.

Single photon emission computed tomography (SPECT) images can reflect rCBF at the time of tracer injection. Concomitant video-EEG recording is necessary for ictal studies, which need to be considered in comparison with an interictal scan and an MRI. Interpretation must be cautious, but may yield data that is useful in the investigation of patients for possible surgical treatment.

## **New Anticonvulsant Drugs, Unbiased Opinions**

### **Professor David Chadwick**

New antiepileptic drugs are licensed when they are shown to possess efficacy and reasonable tolerability and safety. These issues will not answer questions about clinical utility which would demand comparison between drugs, both new and standard. The goal standard for determining clinical utility will be data derived from head to head comparative studies, but these may only become available some considerable time after licensing.

One approach to solving these problems is to perform aggregate data meta-analysis on clinical trials using similar designs. This approach has been utilised examining all available placebo-controlled add-on studies in patients with drug refractory partial epilepsy. This data may give the least biased assessment of the relative efficacy and tolerability and adverse event profile for new drugs.

## **Amygdala and Frontal Lobe Pathology in Patients with Temporal Lobe Epilepsy and Affective Aggression. A Quantitative Magnetic Resonance Imaging Study**

### **L. Tebartz van Elst, F.G. Woermann, L. Lemieux, P.J. Thompson, M.R. Trimble**

Recurrent episodes with interictal affective aggression are a rare but well recognised problem in patients with temporal lobe epilepsy (TLE). They are referred to as episodic dyscontrol or more precisely as intermittent explosive disorder (IED). The amygdala play a crucial role in the affective evaluation of multimodal sensory input and the neurobiological mediation of aggressive behaviour. With hippocampal sclerosis (HS) in the context of mesial temporal lobe sclerosis (MTS) being the most common cause of TLE we hypothesised that the amygdala might be affected by the same pathogenic process in aggressive patients. We investigated 50 patients with TLE: 25 with and 25 without a history of IED. Data from clinical, electrophysiological, neuropsychological and psychometric investigations were obtained, as well as MRI scans for the quantitative assessment of possible amygdala pathology. We found no evidence of a higher prevalence of amygdala sclerosis (AS) in the aggressive patients. HS was significantly less common in patients with TLE and IED.

However, a significant subgroup of patients (20%) with TLE and aggressive behaviour had severe amygdala atrophy in the context of a history of encephalitis. Another subgroup of aggressive patients (28%) had different left temporal lesions affecting either the amygdala or periamygdaloid structures. IED was associated with left sided or bilateral EEG and MRI abnormalities, low IQ and high scores in depression and anxiety. In a second step we analyzed frontal lobe volumes in these patient groups using statistical parametric mapping of the 3-D-data sets. We found significant volumes losses in left frontal areas in patients with TLE and IED. These results are going to be discussed in terms of there implications for our understanding of episodic dyscontrol.

### **Epilepsy? - Narcolepsy: a report of three cases** **Adam Zeman, Rebecca Aylward**

The colourful clinical features of narcolepsy lend themselves to misinterpretation. We describe three narcoleptic patients with mistaken diagnoses of epilepsy. In two, episodes of cataplexy had been treated as convulsive seizures; on closer questioning, both patients described sleep attacks, sleep paralysis and hypnagogic hallucinations. HLA-typing, multiple sleep latency tests and polysomnography confirmed the diagnosis. A third patient gave a 15 year history of intrusive 'dream-like' mental imagery. Ambulatory EEG revealed that her hallucinatory episodes coincided with entry into REM sleep. HLA-typing was in keeping with narcolepsy. We review diagnostic criteria for narcolepsy and the distinctive features of cataplexy and narcoleptic hallucinations.

### **Electroconvulsive Therapy in Parkinson's Disease** **Raymond A. Faber**

A 57 year old man with Parkinson's disease (PD) who had a robust response to electroconvulsive therapy (ECT) will be presented. The patient had suffered from PD for 10 years and in spite of a pallidotomy 6 months earlier was severely incapacitated. He could not walk, his speech was barely audible, he was fed through a feeding tube, and had multiple contractures secondary to profound rigidity.

After 4 bilateral ECT's the patient had dramatic improvement in all aspects of his PD. His feeding tube was removed shortly thereafter. He remained in this improved state for the following 18 months with several maintenance ECT's. The video details the brilliant response some patients with PD can have with ECT.

### **A Case Report Of Epilepsy And Homicide** **Dr PBC Fenwick, Dr. J. Lumsden, Professor G. Fenton**

In December 1984 the Defendant picked up a hitchhiker and made sexual advances to her. She resisted, and he struck and killed her. He was convicted of manslaughter and jailed for life. The case was Appealed in 1997 on the grounds that the Defendant had epilepsy and in 1998 a plea of Diminished Responsibility was accepted. Examination showed the Defendant to have absence seizures and partial complex seizures arising from the frontal lobes, precipitated by sexual excitement. During a seizure a SPET scan showed increased frontal uptake. GSR response showed him to be emotionally unresponsive after an absence seizure.

### **The Basis for Musical Hallucinosi** **T D Griffiths**

This work assesses the phenomenology and substrate for musical hallucinosis in five patients with the auditory form of the Charles Bonnet syndrome. In this disorder I hypothesise that the hallucinations are a manifestation of activity of the normal musical imagery mechanism. In all cases I have carried out a clinical assessment and PET study. The PET study is a regional cerebral blood flow study of areas where activity varies as a function of the severity and type of musical hallucinosis Comparison of the activated areas with known areas for musical perception and imagery in normals supports the hypothesis.