Neurosurgery for Severe OCD: The Past, Present and Future

Professor Eileen Joyce, is a Professor of Neuropsychiatry at The Institute of Neurology, University College London. Her current research focuses on interventions for neuropsychiatric disorders such as schizophrenia, OCD and Tourette's syndrome and their mechanisms of action.

Professor Joyce obtained her first degree in experimental psychology and PhD in dopamine psychopharmacology from the University of Cambridge. She then went into medicine also at Cambridge. She trained in psychiatry at the Bethlem and Maudsley Hospitals and spent several years as a research worker at the Institute of Psychiatry, where she was a Wellcome Trust Lecturer in Mental Health followed by time at the USA National Institutes of Health. Before moving to UCL/UCLH, she was Professor of Neuropsychiatry at Imperial College London.

Prof Joyce is also the PI for UCL-MRC trial of DBS for treatment refractory OCD.

Abstract

Obsessive compulsive disorder (OCD) is a common disorder thought to have a prevalence of 1-2%. The majority of patients are helped by treatments such as exposure and response prevention therapy and medication. A significant minority fail to benefit from optimal treatment and are severely disabled with respect to everyday function. Such patients may be candidates for a neurosurgical approach. This talk will trace the development of neurosurgery for severe OCD beginning with leucotomy/lobotomy which was practiced in the early part of the 20th Century and left an unfavourable legacy. Advancements in neurosurgery have allowed techniques such as anterior cingulotomy and anterior capsulotomy to be practiced at present and will be compared. Deep brain stimulation for severe OCD was introduced as an alternative to ablation neurosurgery but the optimal target for electrode placement remains under debate and will be discussed with reference to a study directly comparing DBS of two emerging targets within the same patients. Finally, methods of target refinement will be discussed which may improve patients outcome in the near future.

Personalzed closed-loop neurostimulation for depression

Dr. Katherine Scangos, MD, PhD, is a psychiatrist and neuroscientist who focuses on circuit-level models of depression as an Assistant Professor in the University of California, San Francisco Department of Psychiatry.

Dr. Katherine Scangos', clinical work centers on interventional psychiatry. She co-directs the Transcranial Magnetic Stimulation and Neuromodulation clinic at UCSF. She also conducts quantitative neuroscience research on the development of electrophysiologic biomarkers in patients with mood disorders and works to develop new forms of brain stimulation therapies. Her goal is to translate these findings into a better understanding of neuropsychiatric illness and the development of novel therapeutics. She currently co-leads a clinical trial of personalized closed-loop deep brain stimulation in patients with depression. Dr. Scangos is a recipient of the National Institute of Mental Health's Outstanding Resident Award Program, a Brain and Behavioral Research Foundation NARSAD Young Investigator Grant, and a 1907 Trailblazer award. She receives funding from the National Institute of Neurological Disorders and National Institute of Mental Health. She received her medical degree and a doctorate in neuroscience from Johns Hopkins School of Medicine (MD/PhD). She subsequently completed psychiatry residency at University of California, Davis and a fellowship in Interventional Psychiatry at University of California, San Francisco.

Abstract

Major depression (MDD) is a common psychiatric condition and a leading cause of disability worldwide. While psychotherapy and pharmacotherapy are effective treatments for the majority of people, a substantial number of patients remain refractory to all available treatments. Neuromodulation such as deep brain stimulation (DBS), is a promising solution for these people. However, results from randomized controlled trials of DBS for depression have been inconsistent, suggesting novel strategies for neuromodulation are needed. One such strategy is personalized closed-loop neurostimulation. It addresses the challenge posed by the etiological and diagnostic heterogeneity of depression. Personalized closed-loop neurostimulation involves individualized target selection, customized biomarker driven stimulation, and continuous neural sensing so that treatment is both spatially and temporally individualized.

The role of neuroimaging and neuromodulation

Michael D. Fox, MD, PhD, is the founding Director of the Center for Brain Circuit Therapeutics at Brigham and Women's Hospital and Associate Professor of Neurology at Harvard Medical School.

Michael D. Fox, MD, PhD, is the founding Director of the Center for Brain Circuit Therapeutics at Brigham and Women's Hospital and Associate Professor of Neurology at Harvard Medical School. He is also the inaugural Raymond D. Adams Distinguished Chair of Neurology and the Kaye Family Research Director of Brain Stimulation.

He completed a degree in Electrical Engineering at Ohio State University, an MD and PhD at Washington University in St. Louis, and Neurology Residency and Movement Disorders Fellowship at Mass Gen Brigham. Clinically, he specializes in the use of invasive and noninvasive brain stimulation for the treatment of neurological and psychiatric symptoms.

Dr. Fox's research focuses on developing new and improved treatments for brain disease by understanding brain circuits and the effects of neuromodulation. His papers have been cited over 30,000 times and he has won multiple awards, including the inaugural Trailblazer Prize for Clinician Scientists from the NIH, a single award across all medical specialties for advances in translational research.

Abstract

Brain Computer Interface for paralysis

Leigh R. Hochberg, is Professor of Engineering, School of Engineering & Carney Institute for Brain Science, Brown University; Director, VA RR&D Center for Neurorestoration & Neurotechnology (CfNN), Providence VAMC; Neurologist at Massachusetts General Hospital, where he attends in the NeuroICU and on the Acute Stroke service; and Senior Lecturer on Neurology at Harvard Medical School.

Professor Hochberg also directs the Center for Neurotechnology and Neurorecovery at MGH, and is the IDE Sponsor-Investigator and Principal Investigator of the BrainGate clinical trials, conducted by a close collaboration of scientists and clinicians at Brown, Case Western Reserve, MGH, Providence VAMC, and Stanford. Dr. Hochberg's research focuses on the development and testing of novel neurotechnologies to help people with paralysis and other neurologic disorders. Dr. Hochberg and his research with the collaborative BrainGate team have been honored with the Joseph Martin Prize in Basic Research, the Herbert Pardes Prize for Excellence in Clinical Research, the first Israel Brain Technologies international B.R.A.I.N. Prize, presented by President Shimon Peres, and the Derek Denny-Brown Young Neurological Scholar Award. Dr. Hochberg's BrainGate research, which has been published Nature, Lancet, Science Translational Medicine, eLife, Nature Medicine, Nature Neuroscience, the Journal of Neuroscience, the Journal of Neural Engineering, and others, is supported by the Rehabilitation R&D Service of the U.S. Department of Veterans Affairs, the NIH BRAIN Initiative/NINDS, NIDCD, and philanthropies including the ALS Association, the Movement Disorder Foundation and the Cerebral Palsy Alliance Research Foundation.

Abstract

Intracortically-based Brain-Computer Interfaces (iBCIs) are poised to revolutionize our ability to restore lost neurologic functions. By recording high resolution neural activity from the brain, the "intention" to move one's hand can be detected and decoded in real-time, potentially providing people with motor neuron disease (ALS), stroke, or spinal cord injury with restored or maintained ability to control communication devices, assistive technologies, and their own limbs. iBCIs also are central to the development of closed-loop neuromodulation systems, with great potential to serve people with neuropsychiatric disorders. A multi-site pilot clinical trial of the investigational BrainGate system is assessing the feasibility of people with tetraplegia controlling a computer cursor and other devices simply by imagining the movement of their own arm or hand. This presentation will review some of the recent progress made in iBCIs, the information that can be decoded from ensembles of cortical or subcortical neurons in real-time, and the challenges and opportunities for restorative neurotechnologies in research and clinical practice.

Sex, Bugs & Microwave Attacks: How Bad Science, Mating Insects & Psychogenic Illness Created an International Incident with Cuba

Dr Robert E. Bartholomew, Honorary Senior Lecturer, Department of Psychological Medicine, University of Auckland, Auckland, New Zealand

Abstract

The National Academic of Sciences recently concluded that the most likely explanation for a cluster of health complaints among American diplomats stationed in Cuba between 2016 and 2018, was microwave energy. A considerable amount of misinformation continues to circulate in the media about this episode. The author will refute the NAS report and make the case that the preponderance of evidence supports a psychogenic explanation.

PTSD and war photo journalists

Anthony Feinstein professor of Psychiatry at the University of Toronto

Dr. Feinstein received his medical degree in South Africa at the University of the Witwatersrand. Thereafter he completed his training in Psychiatry at the Royal Free Hospital in London, before training as a neuropsychiatrist at the Institute of Neurology, Queen Square. His Master of Philosophy and Ph.D. Degree were obtained through the University of London. He is professor of Psychiatry at the University of Toronto and a past Chair of the Medical Advisory Committee of the Multiple Sclerosis Society of Canada. He runs a MS-Neuropsychiatry Clinic at Sunnybrook Health Sciences Centre. Dr. Feinstein is the author of In Conflict (New Namibia Books, 1998), Dangerous Lives: War and the Men and Women Who Report It (Thomas Allen, Toronto 2003), The Clinical Neuropsychiatry of Multiple Sclerosis (Cambridge University Press 1999, with a second edition in 2007), Michael Rabin, America's Virtuoso Violinist (Amadeus Press, 2005, second edition, 2011; audiobook, 2017), Journalists Under Fire: the Psychological Hazards of Covering War (John Hopkins University Press, 2006), Battle Scarred (Tafelberg Press, 2011) and Shooting War (Glitterati Editions, 2018). His new book, Mind, Mood and Multiple Sclerosis (John Hopkins University Press) is due out next year. He has published widely in peer-reviewed journals and has authored many book chapters. In 2000-2001 he was awarded a Guggenheim Fellowship to study mental health issues in post-apartheid Namibia. In 2012, he produced a documentary, "Under Fire" based on his research of journalists in war zones. It was shortlisted for an Academy Award and won a 2012 Peabody Award. His series Shooting War (http://tgam.ca/ShootingWar) for the Globe and Mail Newspaper was shortlisted for a 2016 EPPY award.

Abstract

War journalism is becoming increasingly dangerous. Journalists who define their careers by longevity in war zones have a lifetime prevalence of PTSD similar to frontline combat veterans. Local journalists can also confront grave danger, but unlike foreign correspondents, they work **and live** in dangerous places. They too have rates of PTSD and depression that well exceed that seen in the general population. Local journalists whose families are targeted are particularly vulnerable in this regard. Journalists who chose these dangerous career paths differ cognitively from their colleagues who have chosen less adventurous careers, most notably when it comes to decisions that entail risk. The ability to manage anxiety and fear in extreme situations may to a degree be modulated by epigenetic factors.

Covid-19 and Neuropsychiatry

Dr Benedict D Michael Senior Clinician Scientist Fellow (MRC/NIHR) University of Liverpool and NIHR HPRU for Emerging and Zoonotic Infection. Honorary Consultant Neurologist The Walton Centre NHS Foundation Trust.

Dr Tim Nicholson Clinical Senior Lecturer, Neuropsychiatry Research and Education Group, Institute of Psychiatry Psychology & Neuroscience, King's College London. Honorary Consultant Neuropsychiatrist South London & Maudsley NHS Foundation Trust.

Abstract

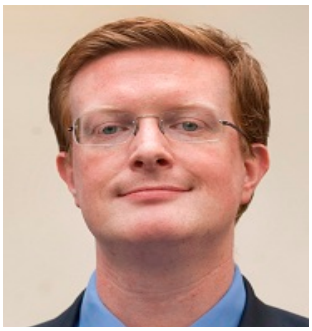
As the clinical features and potential complications of COVID-19 emerged last year it became clear that neurological, neuropsychiatric and psychiatric disorders were potentially significant. There were also reasons to expect this from past viral outbreaks, including other severe coronaviruses. The CoroNerve study, led by Ben Michael and colleagues, was rapidly set up to as a UK-wide surveillance system for clinicians to initially briefly notify cases and later provide full clinical details. A psychiatry reporting system, led by the RCPsych neuropsychiatry faculty, was added and the first 153 notifications were published last June . The full clinical details of the first 267 cases completed were published as a preprint in January.

The has been a rapid growth in the number and quality of publications regarding the neuropsychiatry of COVID-19 and this has been collated on the JNNP 'Neurology & Neuropsychiatry of COVID-19' blog which we set up to respond to the need for rapid capture and synthesis of a fast moving field with weekly updates and publications from a growing international team, including a recently published preprint systematic review and meta-analysis of the neurology and neuropsychiatry of COVID-19. We will jointly review the CoroNerve data and its context in the emerging wider evidence base regarding the neuropsychiatry of COVID-19, highlighting exciting new research areas such as long COVID and projects such as the recently started COVID-CNS study funded by UKRI.

We would like to thank those who have already submitted cases to CoroNerve and encourage others to do the same, including those associated with COVID-19 vaccination, and to flag up that notifying a case and providing data results in pubmed searchable collaborator status on resulting publications.

Clinical update on delirium

Professor Alasdair M J MacLullich
Professor of Geriatric Medicine, Usher Institute, University of Edinburgh



Following undergraduate medical training at the University of Edinburgh, including an intercalated BSc in Psychology, Alasdair MacLullich completed general medical training and went on to do a PhD on glucocorticoids and cognitive ageing. He was Clinical Lecturer in Geriatric Medicine from 2000-2005 then MRC Clinician Scientist Fellow from 2005-2009, and was appointed Professor of Geriatric Medicine in 2009. His main research interests are the clinical assessment, neuropsychology, and pathophysiology of delirium. He also has interests in dementia, frailty, and hip fracture research. He is the main author of the 4AT delirium assessment tool. He co-founded the European Delirium Association in 2006 and the Scottish Delirium Association in 2011.

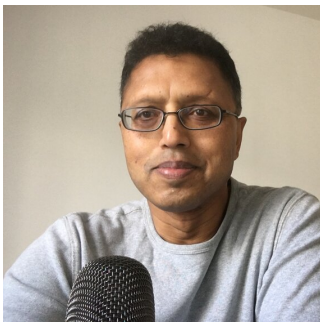
Alasdair MacLullich is active clinically, working in acute geriatric medicine and acute orthogeriatrics. He co-chaired the committee which produced the Scottish Intercollegiate Guidelines Network guidelines on delirium, published in 2019. He is Chair of the Scottish Hip Fracture Audit Steering Group.

Abstract

Delirium affects more than 20% of older people in the acute hospital. It is has multiple adverse outcomes including increased length of stay, loss of independence, and increased mortality.The importance of distress in delirium, affecting both patients and carers, has emerged as a core issue in the care of patients with delirium. Additionally, recent research has shown that delirium is associated with a higher risk of new onset dementia as well as acceleration of existing dementia.
In this lecture the following topics will be covered: current diagnostic criteria for delirium; updates in understanding of terminology including appropriate use of the terms delirium and acute encephalopathy; epidemiology including the relationship between delirium and future dementia risk; a summary of current understanding of pathophysiology including delirium-dementia relationships; clinical care including detection (distinguishing between episodic and inpatient monitoring tools; treatment; prevention; future directions in clinical care and research.

When the spark goes out: The neurology of apathy and motivation

Masud Husain, Nuffield Dept Clinical Neurosciences & Dept Experimental Psychology, University of Oxford | www.masudhusain.org



Masud Husain is Professor of Neurology & Cognitive Neuroscience at the University of Oxford and Wellcome Trust Principal Research Fellow. He leads the Neurological Conditions theme of the Oxford Biomedical Research Centre and is Professorial Fellow at New College, Oxford. His research focuses on mechanisms underlying memory and motivation deficits in healthy people and patients with neurodegenerative disorders, including Parkinson's disease, Alzheimer's disease and small vessel cerebrovascular disease. Masud is Co-Chair of the European Academy of Neurology Scientific Panel on Higher Cortical Functions and becomes Editor of Brain in January, 2021.

Abstract

Disorders of motivation are common across brain disorders. Clinicians frequently encounter pathological apathy across a range of conditions, including many neurodegenerative conditions such as small cerebrovascular disease, Parkinson's and Alzheimer's disease. It is now becoming understood that apathy has a poor prognosis for long-term functional and cognitive outcome. Unfortunately, we understand very little about the mechanisms underlying the syndrome.

In this talk, I shall put forward a conceptual framework with which we can begin to understand apathy by considering the processes that normally underlie motivated, goal-directed behavior. In particular I'll focus on the ability to generate options for behavior and effort-based decision making for rewards. Recent studies of the latter have been particularly revealing in both healthy people and neurological patient populations.

Several lines of evidence suggest that when we make decisions about how much effort we might invest in actions, we weigh up the costs involved for the potential rewards to be obtained. Functional imaging in healthy people reveals both medial frontal and basal ganglia involvement when individuals make such decisions. In patients with apathy, this evaluation is altered. Apathetic patients show blunted sensitivity to rewards and less inclination to invest effort for low rewards than healthy individuals. Some evidence shows that these factors can be improved by dopaminergic medication. The findings support the view that it might be possible to provide a mechanistic account of the syndrome of apathy which might lead to treatments for the disorder.