Abstract

Study Objectives. Coordinated specialty care (CSC) is widely accepted as an evidence-based treatment for first episode psychosis (FEP). The NAVIGATE intervention from the Recovery After an Initial Schizophrenia Episode Early Treatment Program (RAISE-ETP) study is a CSC intervention which offers a suite of evidence-based treatments shown to improve engagement and clinical outcomes, especially in those with shorter duration of untreated psychosis (DUP). Coincident with the publication of this study, legislation was passed by the United States Congress in 2014–15 to fund CSC for FEP via a Substance Abuse and Mental Health Services Administration (SAMHSA) block grant set-aside for each state. In Michigan (MI) the management of this grant was delegated to Network180, the community mental health authority in Kent County, with the goal of making CSC more widely available to the 10 million people in MI. Limited research describes the outcomes of implementation of CSC into community practices with no published accounts evaluating the use of the NAVIGATE intervention in a naturalistic setting. We describe the outcomes of NAVIGATE implementation in the state of MI.
Methods. In 2014, 3 centers in MI were selected and trained to provide NAVIGATE CSC for FEP. In 2016 a 4th center was added, and 2 existing centers were expanded to provide additional access to NAVIGATE. Inclusion: age 18–31, served in 1 of 4 FEP centers in MI. Data collection began in 2015 for basic demographics, global illness (CGI q3 mo), hospital/ED use and work/school (SURF q3 mo) and was expanded in 2016 to include further demographics, diagnosis, DUP, vital signs; and in 2018 for clinical symptoms with the modified Colorado Symptom Inventory (mCSI q6 mo), reported via an online portal. This analysis used data until 12/31/19. Mixed effects models adjusted by age, sex and race were used to account for correlated data within patients.
Results. N=283 had useable demographic information and were included in the analysis. Age at enrollment was 21.6 ± 3.0 yrs; 74.2% male; 53.4% Caucasian, 34.6% African American; 12.9 ± 1.7 yrs of education (N=195). 18 mo retention was 67% with no difference by sex or race. CGI scores decreased 20% from baseline (BL) to 18 mo (BL=3.5, N=134; 15–18 mo=2.8, N=60). Service utilization via the SURF was measured at BL (N=172) and 18 mo (N=72): psychiatric hospitalizations occurred in 37% at BL and 6% at 18 mo ($p<0.01$); ER visits occurred in 40% at BL and 13% at 18 mo ($p<0.01$). 44% were working or in school at BL and 68% at 18 mo ($p<0.01$). 21% were on antipsychotics (AP) at BL (N=178) and 85% at 18 mo (N=13) with 8% and 54% on long acting injectable-AP at BL and 18 mo, respectively. Limitations include missing data and lack of a control group.
Conclusion. The implementation of the NAVIGATE CSC program for FEP in MI resulted in meaningful clinical improvement for enrollees. Further support could make this evidence-based intervention available to more people with FEP.
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The Challenge of Managing Patients Suffering from TBI: The Utility of Multiparametric MRI

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Abstract

Traumatic brain injury (TBI) is a complex phenomenon affecting multiple areas of the brain in multiple ways. Both right and left hemispheres are affected as well as supratentorial and infratentorial compartments. These multifocal injuries are caused by many factors including acute mechanical injury, focal intracranial hemorrhage, blunt and rotational forces, epidural and subdural hematoma, hypoxemia, hypotension, edema, axonal damage, neuronal death, gliosis and blood brain barrier disruption. Clinicians and patients benefit by precise information about the neuroanatomical areas that are affected macroscopically, microscopically and biochemically in an individual patient.
Standard imaging studies are frequently negative or grossly underestimate the severity of TBI and may exacerbate and prolong patient suffering with an imaging result of "no significant abnormality". Specifically, sophisticated imaging tools have been developed which reveal significant damage to the brain structure including atrophy, MRI spectroscopy showing variations in neuronal metabolite N-acetyl-aspartate, elevations of membrane related Choline, and the glial metabolite myo-inositol is often observed to be increased post injury. In addition, susceptibility weighted imaging (SWI) has been shown to be more reliable for detecting microbleeds versus calcifications.
We have selected two TBI patients with diffuse traumatic brain injury.
The first patient is a 43-year-old male who suffered severe traumatic brain injury from a motorcycle accident in 2016. Following the accident, the patient was diagnosed with seizures, major depression, and intermittent explosive disorder. He has attempted suicide and has neurobehavioral disinhibition including severe anger, agitation and irritability. He denies psychiatric history prior to TBI and has negative family history. Following the TBI, he became physically aggressive and assaultive in public with minimal provocation. He denies symptoms of thought disorder and mania. He is negative for symptoms of cognitive decline or encephalopathy.

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The second patient is a 49-year-old male who suffered at least 3 concussive blasts in the Army and a parachute injury. Following the last accident, the patient was diagnosed with major depressive disorder, panic disorder, PTSD and generalized anxiety disorder. He denies any psychiatric history prior to TBI including negative family history of psychiatric illness. In addition, he now suffers from nervousness, irritability, anger, emotional lability and concurrent concentration issues, problems completing tasks and alterations in memory.
Both patients underwent 1.5T multiparametric MRI using standard T2, FLAIR, DWI and T1 sequences, and specialized sequences including susceptibility weighted (SWAN/SWI), 3D FLAIR, single voxel MRI spectroscopy (MRS), diffusion tensor imaging (DTI), arterial spin labeling perfusion (ASL) and volumetric MRI (NeuroQuant). Importantly, this exam can be performed in 30–45 minutes and requires no injections other than gadolinium in some patients. We will discuss the insights derived from the MRI which detail the injured areas, validate the severity of the brain damage, and provide insight into the psychological, motivational and physical disabilities that afflict these patients. It is our expectation that this kind of imaging study will grow in value as we link specific patterns of injury to specific symptoms and syndromes resulting in more targeted therapies in the future.

A Multiparametric MRI Protocol for Evaluation of Cognitive Insufficiency, Dementia and Traumatic Brain Injury (TBI): A Case Series

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Abstract

Background. The purpose of this work was to determine the extent to which a multiparametric magnetic resonance imaging (MRI) approach to patients with dementia and/or traumatic brain injury (TBI) can help to determine the most likely diagnosis and the prognosis of these patients.
Objective. Volumetric brain MRI alone is recognized as a useful imaging tool to differentiate behavioral variant frontotemporal dementia (bvFTD) from the more common Alzheimer's disease (AD). Our objective is to create a protocol that will provide additional non-standard, objective imaging data that can be utilized clinically to distinguish common and uncommon forms of dementia and TBI. As patients with these diseases are increasingly presenting to clinical practice, our ability to combine multiple parameters within the standard 30-minute or 45-minute (pre- and post-contrast) MRI exams has high potential to affect current and future clinical practice.
Methods. All MRI studies were performed on 1.5 T MRI GE 450w or GE HDx imagers. All patients were seen clinically in outpatient practices. All techniques are FDA approved. The 30 minute protocol utilized T2w FSE 3 mm, 2.5 mm SWAN, 3D T1 sagittal 1.2 mm, DWI 5 mm, 3D FLAIR 1.2 mm, 2.5 mm SWAN (susceptibility sensitive), 3D T1 sagittal 1.2 mm, arterial spin labeling perfusion, posterior cingulate single voxel PRESS MR spectroscopy and NeuroQuant automated volumetric analysis and LesionQuant automated lesion detection and measurement. The 45-minute TBI protocol added diffusion tensor imaging, MR spectroscopy (MRS) of normal appearing frontal white matter and 3D gadolinium enhanced technique.
Results. The combination of multiparametric data together with standard imaging and clinical information allowed radiologic interpretation that was able to focus on 1–2 specific diagnoses and to indicate those patients in which a combination of pathologies was most likely. Neurologists, gerontologists, neuropsychologists and psychiatric specialists used these data and our summary conclusions to develop more specific diagnoses, treatments and prognoses.
Conclusions. Readily available MRI techniques can be added to standard imaging to markedly improve the usefulness of the radiologic opinion in cases of subjective cognitive insufficiency, clinical mild cognitive insufficiency, behavioral pathologies, dementia and post-traumatic brain syndromes.

Use of a Consultation Service Following Pharmacogenomic Testing in Psychiatry

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Abstract

Background. There is a plethora of drugs available to psychiatrists for treatment of mental illness, which can vary in efficacy, tolerability, metabolic pathways and drug-drug interactions. Psychotropics are the second most commonly listed therapeutic class mentioned in the FDA's Table of Pharmacogenomic Biomarkers in Drug Labeling. Pharmacogenomic (PGx) assays are increasingly used in psychiatry to help select safe and appropriate medication for a variety of mental illnesses. Our commercial laboratory offers PGx expert consultations by PharmDs and PhDs to clinician-users. Our database contains valuable information regarding the treatment of a diverse and challenging population.
Methods. Genomind offers a PGx assay currently measuring variants of 24 genes relevant for selection of drugs with a mental illness indication. Since 2012 we have analyzed > 250,000 DNA

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