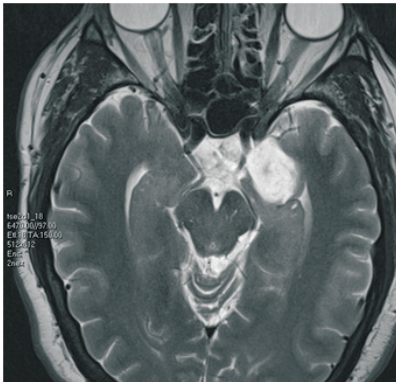
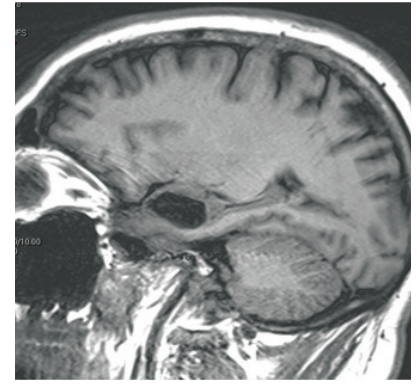


What's Your Diagnosis?

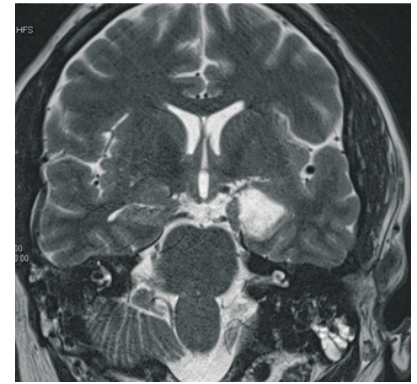
A 44-year-old male with a history of chronic alcohol abuse presented with seizures. These scans were ordered.



What's your diagnosis?

- Arachnoid cyst
- Inflammatory cyst
- Cystic neoplasm
- Dermoid cyst
- Epidermoid

For the answer, please visit
www.csmc.edu/caseofthemoth



To refer a patient, please call (310) 423-8000

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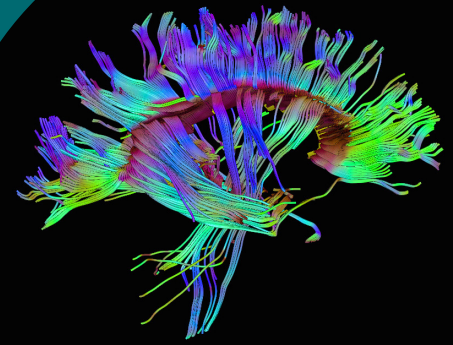


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EYE ON IMAGING

Advances in Neuro Imaging



WINTER 2011

Diagnosing Parkinson's Disease

SPECT scan of the brain using Ioflupane I 123 injections (DaTscan®) is the first and only FDA-approved aid in differentiating a relatively benign condition, essential tremor, from Parkinsonian syndromes. In Europe, DaTscan has been in clinical use for ten years and has been used in nearly 300,000 patients worldwide.

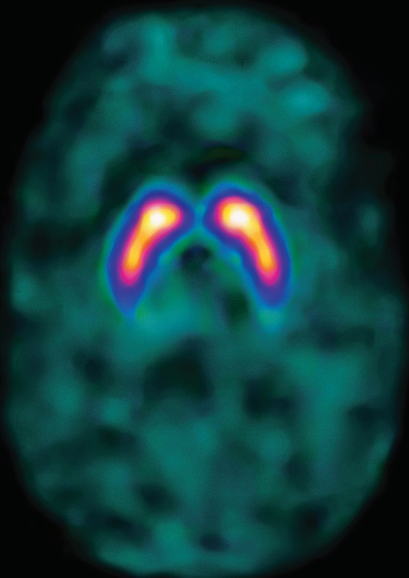
In clinical exams, the signs and symptoms of Parkinsonian syndromes (PS) can be misleading or mimic other conditions, such as essential tremor, especially during the early stages of the disease and

in the elderly. DaTscan can help increase certainty of diagnosis.

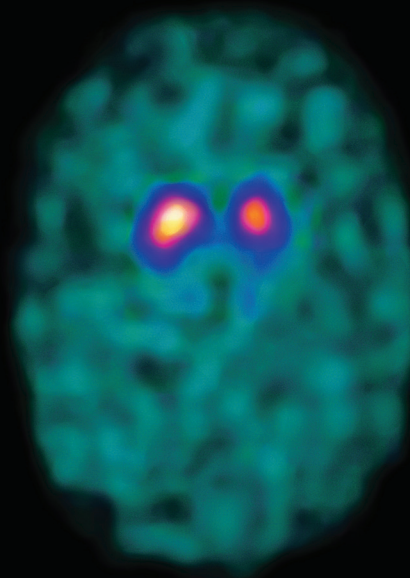
Parkinsonian syndromes are associated with dopamine transporter (DaT) loss in the striata. Ioflupane I 123 is a radiopharmaceutical indicated for striatal DaT visualization using SPECT brain imaging to assist in the evaluation of adult patients with suspected PS. Ioflupane I 123 binds to DaT proteins on dopaminergic nigrostriatal neurons, a bundle of nerve fibers in the brain. In a normal scan, Ioflupane I 123 is distributed in the striata and appear as mirrored "comma" or crescents.

A decrease in Ioflupane I 123 activity results in a circular "period" or ovals and reduced image intensity on one or both sides.

DaTscan helps differentiate essential tremor from tremor due to idiopathic Parkinson's disease, multiple system atrophy, progressive supranuclear palsy or dopaminergic disorders. For dementia patients, DaTscan has been successfully used in Europe to distinguish Alzheimer's disease from a dementia called Lewy Body disease. The ability to accurately diagnose such conditions has important implications for treatment.



DaTscan of normal patient.



DaTscan of patient with Parkinsonian syndrome.

IN THIS ISSUE

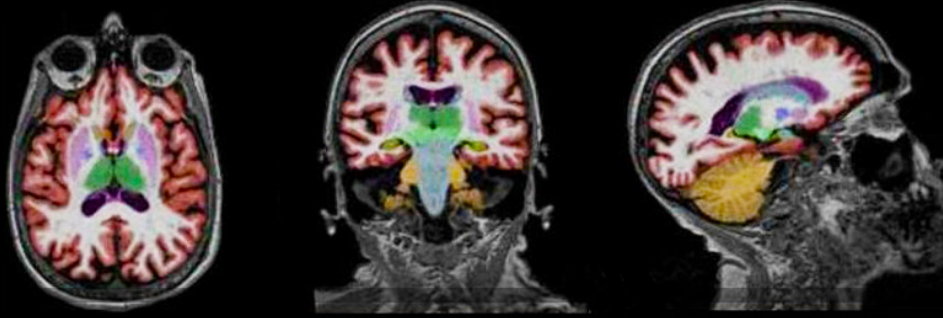
- Earliest Alzheimer's Detection
- Functional MRI
- Recent Research
- New Interventional Oncologist/ Interventional Radiologist
- What's Your Diagnosis?

Chair:

Barry D. Pressman, MD, FACR

Co-Chair:

Marcel Maya, MD



MRI brain showing Hippocampus size

Earliest Alzheimer's Detection

PET imaging is still valuable in the diagnosis of Alzheimer's disease. However, we now offer a new MRI technique that measures the size of the hippocampus, which has been shown to correlate with mild cognitive impairment and, with further degeneration, with Alzheimer's disease.

The technique allows neuroradiologists to analyze the volume of the hippocampus, which in Alzheimer's and dementia patients atrophies disproportionately compared to other parts of the brain. By comparing

MR images of the hippocampus to age-appropriate reference distributions, neuroradiologists are able to compare the volume of a patient's hippocampus with the average for their age group, thereby allowing them to determine the degree of atrophy, which is related to the stage of Alzheimer's.

Our neuroradiologists use a 3T MRI to scan the brain over a slightly longer period than a regular MR brain scan, allowing thinner image slices to be captured. The benefit of using an MR instead of PET, which in-

volves radiation exposure, is that a patient can have as many MR scans as needed to track the progress of the disease. The key is to track changes in a patient's hippocampus over time to measure atrophy. If, after three years, there is no change to the hippocampus, then Alzheimer's can be ruled out. If there is a significant change, then the patient has Alzheimer's. Although there are no current effective treatments for Alzheimer's, our new software allows neuroradiologists to track the effectiveness of future treatments at slowing the progress of the disease.

Functional MRI: Valuable Tool in Preoperative Planning

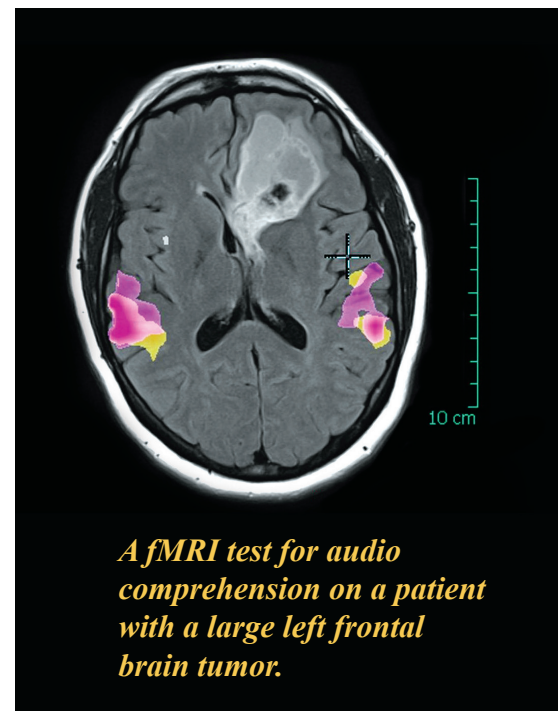
Functional MRI (fMRI), a specialized form of MRI that measures changes in blood flow related to neural activity, offers compelling images of brain "activation" with fine spatial resolution of between 1 and 3 mm.

Functional MRI records signals from all regions of the brain, unlike EEG/MEG which focus on the cortical surface, and does not expose the patient to any radiation.

Standard approaches have been developed for fMRI that allow clinicians and researchers to compare results.

Functional MRI is used for brain mapping, assessing stroke, trauma or degenerative disease, monitoring the growth and function of brain tumors, and to help plan surgery, radiation therapy or other surgical treatments.

Since fMRI images must be interpreted carefully, given the brain's complex processes, only our subspecialized, board-certified neuroradiologists with extensive experience with fMRI are performing this procedure.



A fMRI test for audio comprehension on a patient with a large left frontal brain tumor.

Recent Research:

Digital Subtraction Myelography in the Evaluation of Cerebrospinal Fluid Leaks: Preliminary Results in 20 Patients with Spontaneous Intracranial Hypotension

(Anaya, C. A. • Maya, M. M. • Moser, F. • Schievink, W.)

PURPOSE

Review our technique and experience in performing digital subtraction myelography (DSM) and present our preliminary results with the use of DSM in the evaluation of cerebrospinal fluid (CSF) leaks in patients with diagnosis of spontaneous intracranial hypotension (SIH).

MATERIALS & METHODS

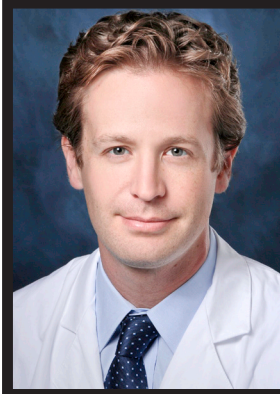
We retrospectively reviewed 20 consecutive patients who underwent DSM for the evaluation of CSF leaks at our institution from 11/09 to 11/10. All patients had clinical symptoms compatible with SIH as well as epidural fluid collections which were identified on either MR myelogram or CT myelogram. We analyzed and presented our technical success rate, leak identification rate and postprocedural complications.

RESULTS

The procedure demonstrates high technical feasibility. The majority of the patients underwent DSM under conscious sedation and a small fraction of the patients had the procedure performed under general anesthesia. The diagnostic accuracy of the exam is highly dependent on the image quality and the patient's ability to maintain suspended respiration. There were no major complications. The rate of minor complications approaches 20% and included headaches, muscle spasms and short-lasting seizures.

CONCLUSION

Digital subtraction myelography is a minimally invasive technique that has the potential of accurately identifying the level of CSF leak in patients with persistent SIH symptoms in which a leak has not been identified by other imaging modalities. Potential complications can be decreased with adequate patient selection and preprocedural planning.



Interventional Oncologist/ Interventional Radiologist Joins Our Team

Carlos A. Anaya, MD, a board-certified, fellowship-trained Vascular and Interventional Radiologist, has joined the S. Mark Taper Foundation Imaging Center. He performs all vascular and interventional procedures, as well as minimally invasive cancer treatments, including Chemoembolization, Internal Radiation Therapy and Ablation therapies, such as Radiofrequency Ablation (RFA), Cryoablation and Microwave Ablation.

Dr. Anaya has presented research on RFA, cryoablation and thermal ablation at many conferences, including the World Conference on Interventional Oncology and meetings of the Society of Interventional Radiology and the Radiological Society of North America.

Fluent in Spanish and French, Dr. Anaya earned his medical degree in Bogotá, Colombia before completing a Radiology residency at the University of Miami's Jackson Memorial Hospital. He completed a Vascular and Interventional Radiology fellowship at UCLA and a Neuroradiology fellowship at Cedars-Sinai.

Super STAT: Critical Patients

For patients who are critical and may be facing a catastrophic event in their brain, the S. Mark Taper Foundation Imaging Department offers Super STAT scans, which are performed and interpreted expeditiously.

To order a Super STAT study, please call scheduling at (310) 423-8000. The required scanner will be held for your critical patient and a neuroradiologist will be ready to read the scan immediately.