Case Study

SyMRI for Advanced MS Diagnosis Beyond Conventional Methods

Advanced Imaging for Precision in MS Diagnosis

SyntheticMR

www.syntheticmr.com

> I find that the **BPF** provided by SyMRI Neuro is a valuable atrophy marker in **MS**, which is not available with conventional imaging, and it's generated without any additional click.

Dr. Julien Savatovsky
Neuroradiologist Deputy, Head of the Imaging Department (Diagnostic Neuroradiology), Rothschild Foundation Hospital, Paris, France.

About Adolphe de Rothschild Foundation, Paris, France.

Founded in 1905, the A de Rothschild Foundation Hospital stands as a pioneering Parisian hospital, widely acclaimed for its outstanding medical care and groundbreaking research in ophthalmology and neuroscience, including neurology, neurosurgery, and interventional neuroradiology.

Each year, the Foundation Rothschild consistently secures the top position in hospital rankings conducted by Le Point magazine, underscoring its unwavering dedication to delivering high-quality medical services, ensuring patient safety, and emphasizing effective communication practices.

Introduction

Advancements in medical imaging technology have significantly reshaped the landscape of neurological diagnostics, particularly in the assessment and management of Multiple Sclerosis (MS).

This clinical case study delves into the application of SyntheticMR's cutting-edge imaging solution, **SyMRI** and **SyMRI 3D**, in the evaluation and tracking of MS progression. Highlighting the pivotal role of SyMRI in enhancing imaging precision, this study presents comprehensive insights into its efficacy and contributions beyond conventional diagnostic methodologies.

Through a detailed analysis of patient cases and imaging results, this study sheds light on how SyMRI's advanced imaging capabilities offer valuable support for neurologists and radiologists in the accurate diagnosis and monitoring of MS-related neurological changes.

Objective decision support in a single fast scan

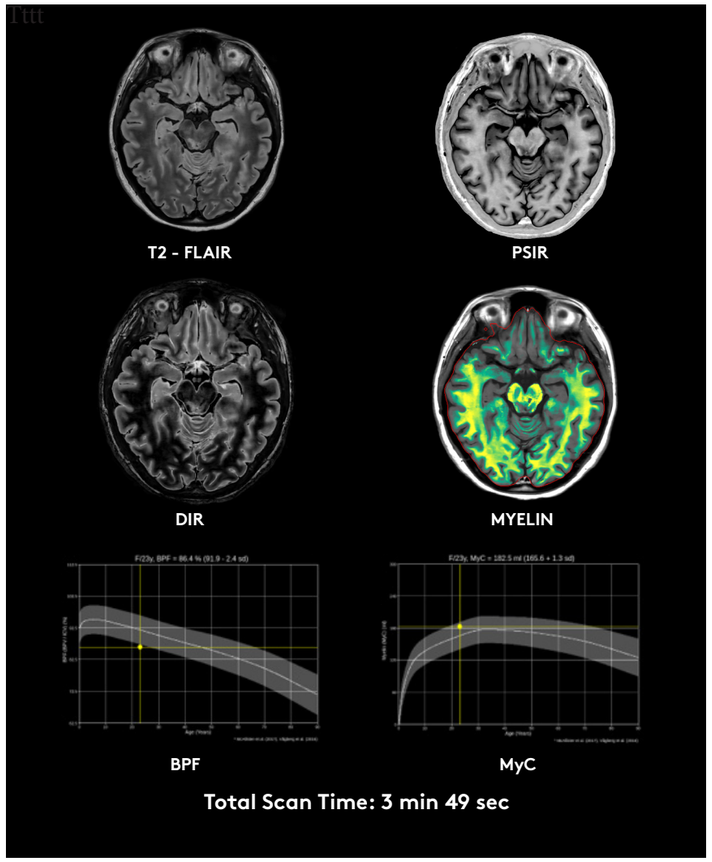
Rapid visualization of reliable quantitative data

Case 1

23-year-old female with Multiple Sclerosis.

The morphology of the MRI scan was not consistent with the patient's symptomatology and degree of disability. The evaluated contrasts, T1, T2, and T2FLAIR showed a small lesion load, with the lesions also being relatively small. PSIR contrast enabled the identification of lesions in the brainstem and cerebellum.

The quantitative data provided by **SyMRI** revealed that the BPF deviated below the normal distribution (2.4 sd below norm), while the MyC exhibited a relatively high value (1.3 sd above norm). This comprehensive data facilitated a deeper understanding of the disease, despite the seemingly contradictory MRI morphology, emphasizing the pivotal role of **SyMRI** in offering a more precise evaluation in cases of Multiple Sclerosis.



Case 2

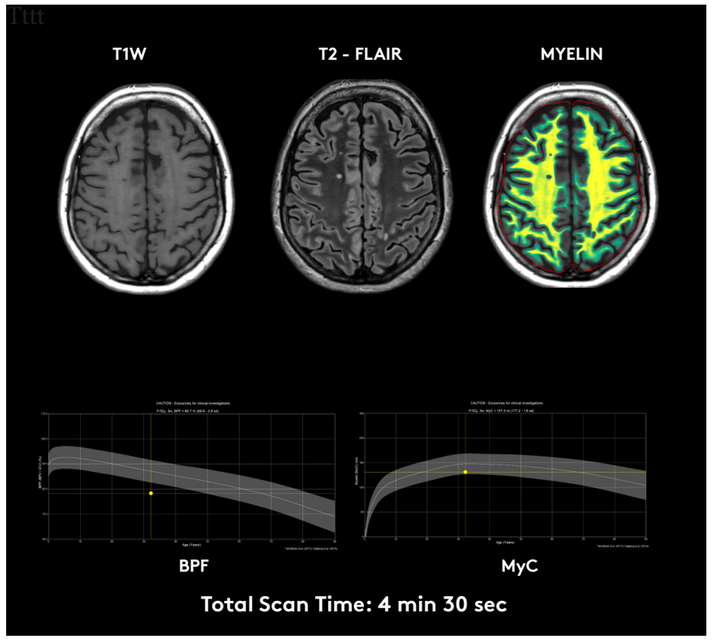
32 years old patient, Multiple Sclerosis follow-up.

The analysis through the age-stratified reference curves provided by **SyMRI** revealed a Brain Parenchyma Fraction falling below anticipated levels, indicating an observable deviation from expected norms in this critical cerebral tissue.

Furthermore, the age-based reference curves highlighted a lower Myelin volume situated within the lower segment of the reference range. This observation suggests a potential variance in myelin content compared to anticipated levels for individuals within this age group.

The utilization of **SyMRI's** age-stratified reference curves emerges as an invaluable tool in aiding the diagnosis and ongoing assessment of pathological conditions.

The quantitative data provided by **SyMRI** serves as a precise means to uncover subtle yet pivotal deviations in brain tissue composition and myelin distribution. This depth of insight equips clinicians with crucial data for refined diagnoses and tailored treatment strategies, facilitating more targeted and personalized patient care.

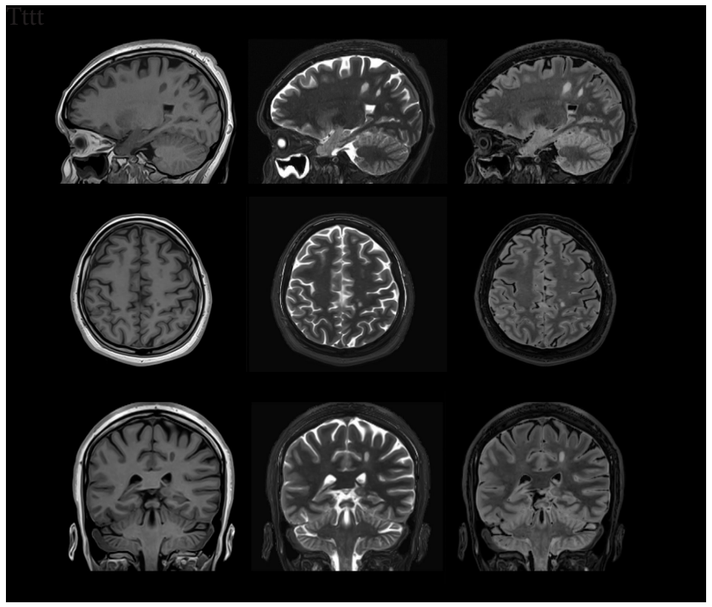


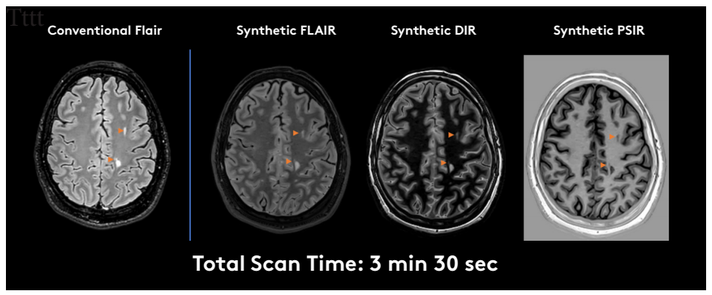
Case 3

30-year-old female, previously diagnosed with Multiple Sclerosis.

A 30-year-old female patient previously diagnosed with Multiple Sclerosis (MS) underwent an annual follow-up to assess neurological damage and monitor the evolution of multiple brain plaques. **SyMRI 3D*** enabled a comprehensive comparison between current and prior examinations, utilizing contrast images within the OFSEP protocol (3D T1, 3D T2FLAIR), as well as DIR and PSIR images, which are useful in better assessing these pathologies. The utilization of reference curves and myelin segmentation offered valuable additional diagnostic insights.

SyMRI 3D* presented six weighted images, ensuring distinct visibility and delineation of MS lesions along three orientation planes, while its comparable image quality enhances the detection of smaller lesions with increased accuracy and ease. This contributes significantly to comprehensive MS lesion assessment.





***SyMRI 3D contrast weighted images** are currently under validation and not yet CE-marked or 510(k) cleared.

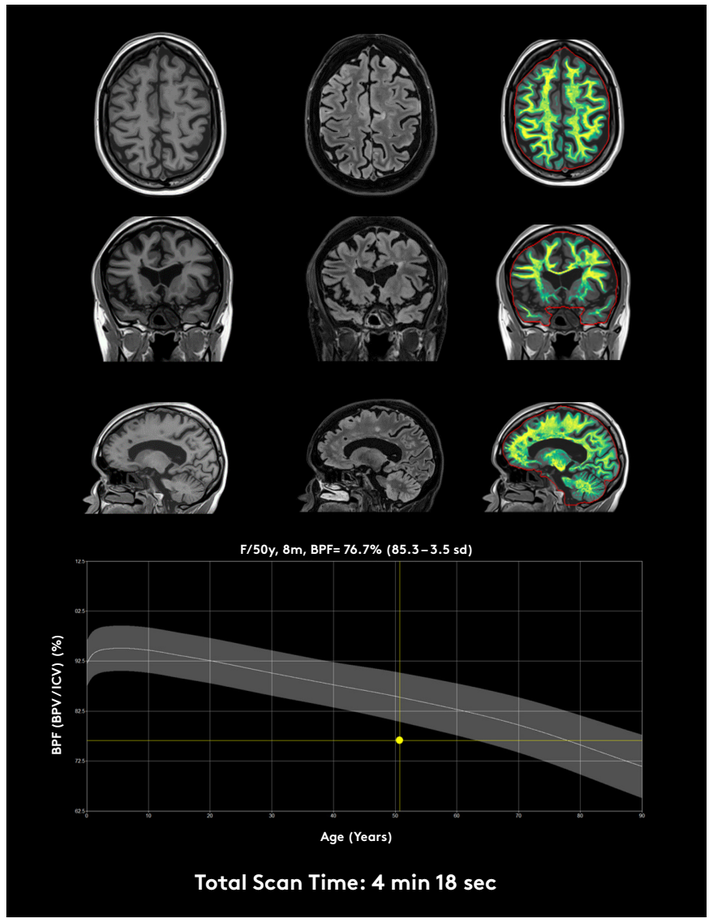
Case 4

50-year-old male, diagnosed with advanced Multiple Sclerosis.

50-year-old male patient diagnosed with advanced multiple sclerosis for several years undergoes annual follow-up examinations to evaluate neurological damage and monitor the progression of numerous brain plaques.

The Brain Parenchymal Fraction (BPF) provided by **SyMRI** emerges as a pivotal atrophy marker in Multiple Sclerosis (MS), a facet absent in conventional imaging methodologies. Remarkably, SyMRI's BPF calculation requires no supplementary user input, streamlining the diagnostic workflow while offering unparalleled insights into MS-related atrophy.

The integration of **SyMRI 3D*** enables comparison of prior assessments using contrast images typical in the OFSEP protocol (T1, T2FLAIR), while also providing DIR and PSIR images, which are particularly beneficial in such pathologies. Moreover, the inclusion of reference curves and myelin segmentation augments diagnostic insights, offering comprehensive support in evaluation and management.



SyntheticMR

About SyMRI

SyMRI offers confident care through intelligent imaging. It combines an MR sequence with post-processing MR software, and includes multiple contrast-weighted images, fully adjustable for TE, TR, and TI values for optimal flexibility. Using only a single scan and with a post-processing time of less than 10 seconds, SyMRI enables automatic segmentations and volume measurements of tissues such as white matter, gray matter, cerebrospinal fluid, and myelin. This allow users to track disease progression or compare against control groups.

SyMRI which is CE marked and FDA cleared for patients of all ages, is available both as astand-alone solution or be fully integrated into the clinical workflow. SyMRI 3D is CE marked and 510(k)-pending.

FRM-95 Case Study RFH Version 1.0

CE 2862