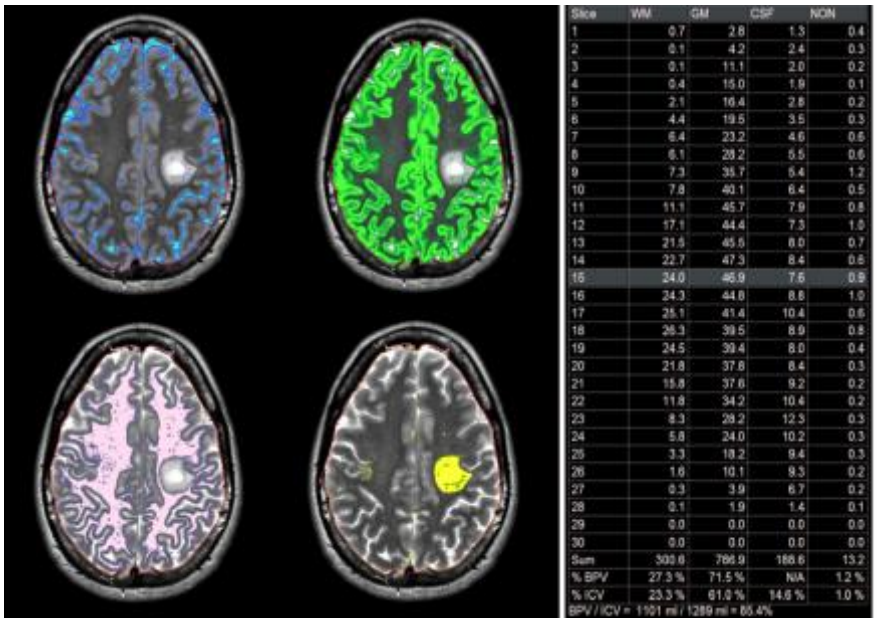
SyMRI® NEURO

Faster workflow, objective decision support

The SyMRI NEURO package provides quantitative MRI images for increased efficiency in analysis and objective decision making. SyMRI NEURO is used in the clinical workflow to follow up disease development of neurodegenerative diseases, based on quantitative measurements.



Slice	WM	GM	CSF	NON
1	0.7	2.8	1.3	0.4
2	0.1	4.2	2.4	0.3
3	0.1	11.1	2.0	0.2
4	0.4	15.0	1.9	0.1
5	2.1	16.4	2.8	0.2
6	4.4	19.5	3.5	0.3
7	6.4	23.2	4.6	0.6
8	6.1	28.2	5.5	0.6
9	7.3	35.7	5.4	1.2
10	7.8	40.1	6.4	0.5
11	11.1	45.7	7.9	0.8
12	17.1	44.4	7.3	1.0
13	21.8	45.5	8.0	0.7
14	22.7	47.3	8.4	0.8
15	24.0	46.9	7.6	0.9
16	24.3	44.8	8.8	1.0
17	25.1	41.4	10.4	0.6
18	26.3	39.5	8.9	0.8
19	24.5	39.4	8.0	0.4
20	21.8	37.8	8.4	0.3
21	15.8	37.6	9.2	0.2
22	11.8	34.2	10.4	0.2
23	8.3	29.2	12.3	0.3
24	5.8	24.0	10.2	0.3
25	3.3	18.2	9.4	0.3
26	1.6	10.1	9.3	0.2
27	0.3	3.9	6.7	0.2
28	0.1	1.9	1.4	0.1
29	0.0	0.0	0.0	0.0
30	0.0	0.0	0.0	0.0
Sum	300.6	766.9	188.6	13.2
% BPV	27.3 %	71.5 %	N/A	1.2 %
% ICV	23.3 %	61.0 %	14.6 %	1.0 %

BPV / ICV = 1101 ml / 1289 ml = 85.4%

Synthetic tissue mapping, based on the SyMRI quantification scan, automatically finds the intracranial volume (red line) and produces partial volume maps for cerebrospinal fluid (upper left) grey matter (upper right), white matter (bottom left), and remaining tissue (bottom right). Volumetric data is automatically presented in a table.

Need for better decision support

Magnetic Resonance Imaging (MRI) is the modality of choice for visualizing soft tissues in the human body. A challenge today, however, is that a diagnosis based on MRI images is often subjective, and important parameters are estimated using visual inspection. Lack of objective, quantitative data to base decisions on limits the ability to trace disease development accurately, and to plan treatment accordingly. Performing manual segmentation of tissue volumes is very resource intensive and requires skilled and experienced personnel.

The SyMRI NEURO package enables objective decision making

The SyMRI NEURO package brings you flexible imaging and quantitative tissue assessment for neurodegenerative diseases, all based on one single MRI scan. The software enables automated tissue characterization and volume estimation, providing objective decision support. Tools are included to easily mark out and measure, for example, Multiple Sclerosis (MS) lesion load, tumor volume, or ventricle volume. With SyMRI NEURO, patient follow-up for neurodegenerative diseases can be based on quantitative measurements.

"SyMRI is included in our standard protocol for MS, hydrocephalus and dementia patients. It provides us with reliable volumetric information in a fast and easy way and enables us to retrieve accurate values on the patient's status that we could not get before."

Richard Birgander
MD PhD, Neuroradiologist at Umeå University Hospital, Sweden

Characterization and measurement of brain tissue

The SyMRI NEURO package automatically characterizes and measures myelin* cerebrospinal fluid (CSF), white matter (WM), gray matter (GM), and remaining tissue. The intracranial cavity and the tissue maps are segmented in a few seconds. Volumetric information is provided for the complete intracranial volume (ICV), per slice and per region of interest.

* REMyDI, now a part of SyMRI®, provides automatic measurement of myelin volume

Easy quantification of myelin allows clinicians to follow myelination in the developing brain and monitor myelin degeneration in patients with demyelinating and neurodegenerative disorders. (Available in the SyMRI NEURO package in 2017).

Automatic measurement of BPF

The Brain Parenchymal fraction (BPF) is a ratio that is calculated based on automatic identification of ICV, brain tissue and CSF. BPF is a valuable and clinically used measurement for brain atrophy in patients with neurodegenerative diseases such as MS and dementia.

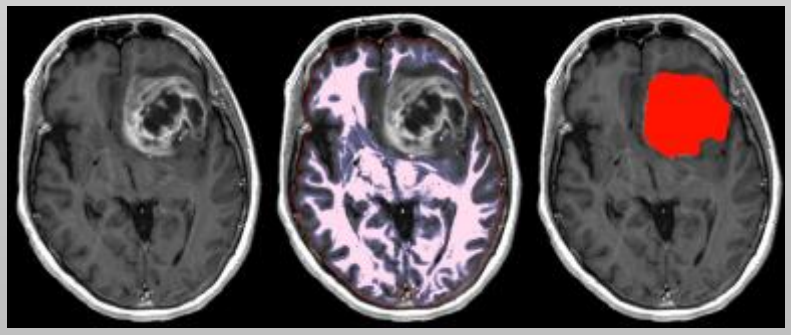
User defined segmentation

The SyMRI NEURO package includes a tool for measuring tissue volume in a region of interest (ROI) defined by the user. This can be used to measure MS lesion load, tumor volume, ventricle volume or other volumes for improved diagnostic capability.

SyMRI is a CE-marked product. SyMRI is FDA 510(k) pending. SyMRI is a registered trademark in EU and USA.

A single, short MRI quantification scan measures physical properties of the patient. Using this data, conventional T1W, T2W and FLAIR images can be synthesized at any combination of TR, TE and inversion delay time TI.

Since all tissues have a unique combination of parameters, the same data can also be used to synthesize tissue maps, for example for white and grey matter. Clinically important information such as total brain volume in comparison to intracranial volume and the total volume of deviating tissue is automatically shown in a table.



In the SyMRI® NEURO package, conventional images, such as T2W, can be recreated and compared with the synthetic tissue maps. Areas of interest can be marked and measured.