



Multiple Sclerosis – Quantification of Plaque Burden and Atrophy

- Dr. Shilpa Sankhe

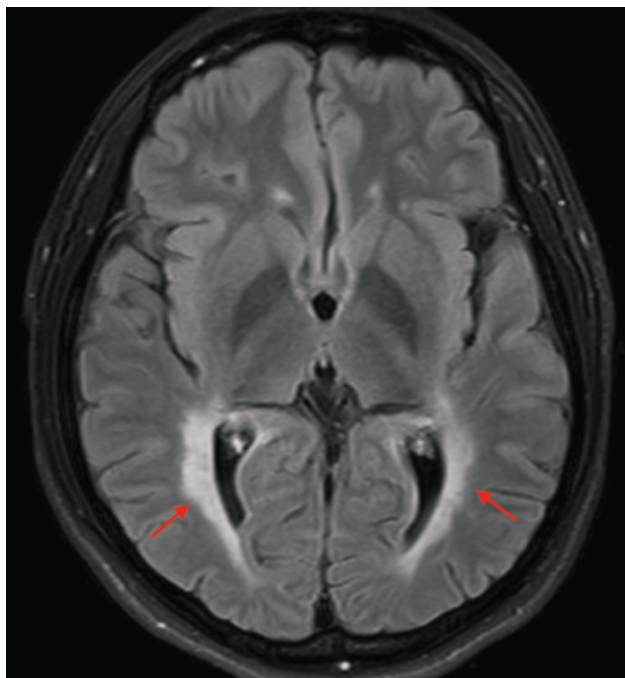


Fig. 1

◀ *Fig 1: Axial FLAIR image shows confluent periventricular plaques (arrows)*

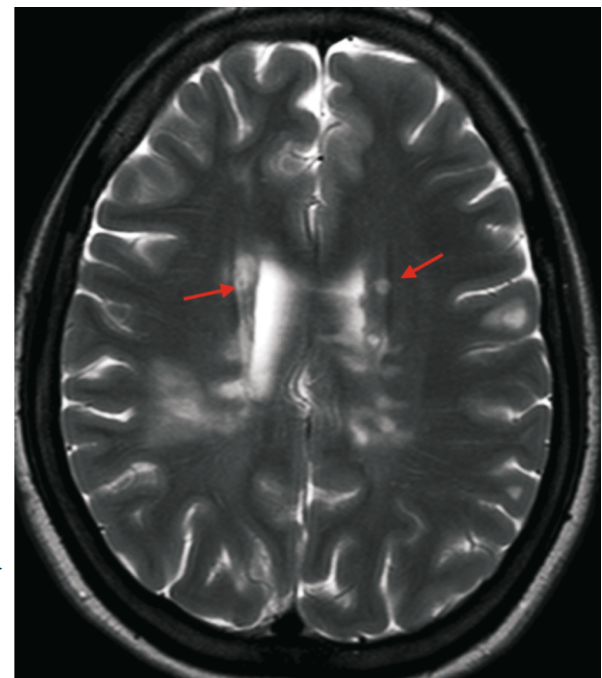


Fig. 2

Fig 2: Axial T2W image with discrete plaques (arrows) ▶

Multiple sclerosis (MS) involves an immune-mediated process in which an abnormal response of the body's immune system is directed against the central nervous system (CNS). Detection of disease is best carried out by MRI.

There are two important quantifiable parameters that help with disease evaluation and monitoring.

Plaque burden can be assessed by quantification of the T2 lesion load (i.e., the total lesion volume and/or number). While it does not necessarily correlate with the patient's functional state, it provides important information related to the natural history and the response or not to treatment.

Atrophy is the ultimate consequence of all types of pathologic processes found in the brain. Although MS is a disease that predominantly affects the white matter, lesions also occur in the gray matter and this involvement may lead to brain atrophy. Correlation between brain atrophy and clinical disability is stronger than the correlation between lesion load and clinical disability. Volumetric MR imaging provides an objective account of the natural history of disease progression, activity, and tissue loss in MS and provides clinicians with a valuable tool for quantifying the disease.

*At a glance:*

- Multiple sclerosis is a disabling condition that affects the brain, spinal cord and optic nerves.
- Plaque burden and atrophy are two quantifiable parameters that affect prognosis

and outcome.

- Quantitative MRI allows us to track these two parameters to understand how the patient is responding to treatment

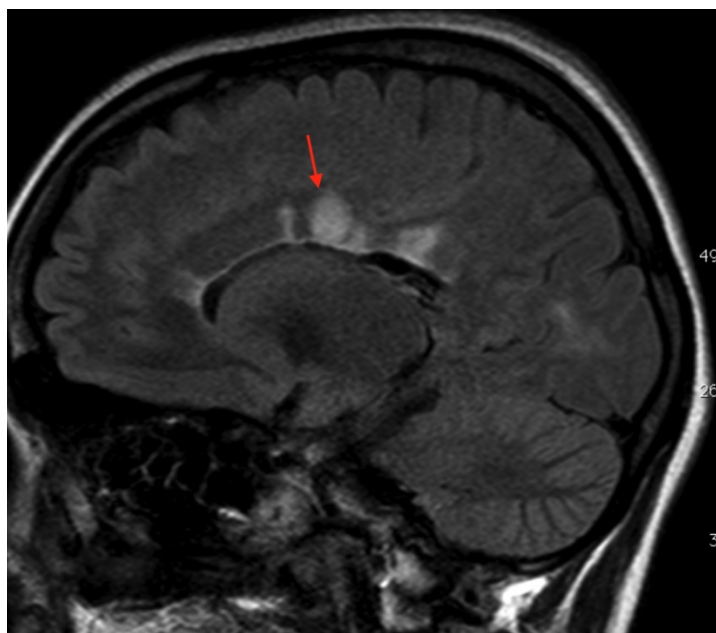


Fig. 3

Fig 3: Sagittal FLAIR image with multiple ovoid plaques along the calloso-septal interface

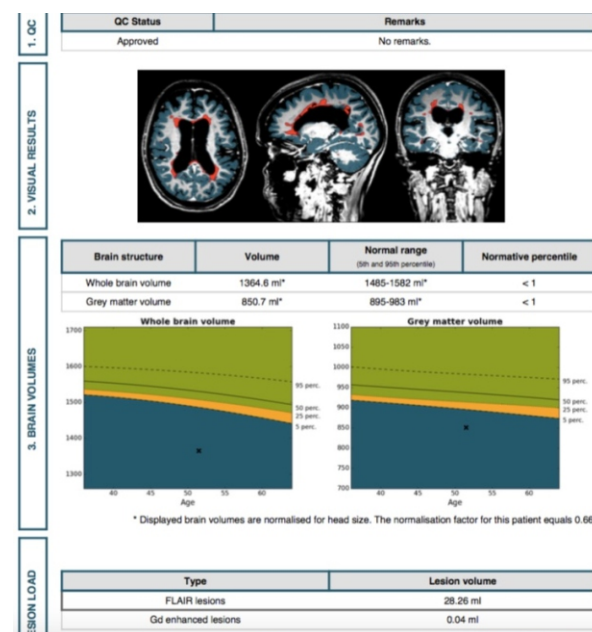


Fig. 4

Fig 4: Sample volumetry report showing the extent of atrophy and the plaque burden

Using specialized software, we are able to now

1. Quantify the total “plaque burden”
2. Compute the extent of atrophy

This now allows us to more meaningfully understand the disease process and with the use of quantitative methods more accurately determine progression, control or regression of disease.

Subscribe to INNER SPACES : info@jankharia.com

Online version : <http://picture-this.in/Index.php/inner-spaces/>

Main Clinic

383 | Bhaveshwar Vihar | Sardar V. P. Road | Prarthana Samaj | Charni Road | Mumbai 400 004 | **T:** 022 66173333 | **F:** 022 2382 9595

Cardiac, Chest & Interventional CT

461 | Nishat Business Centre | Arya Bhavan | Sardar V. P. Road | Mumbai 400 004 | **T:** 022 2380 2172 | 022 2389 3551 / 2

PET / CT, Organ Optimized 3T MRI

Gr. Floor | Piramal Tower Annexe | G. K. Marg | Lower Parel | Mumbai 400 013 | **T:** 022 6617 4444



Owner, Printer & Publisher: Dr. Bhavin Jankharia

Published at: Dr. Jankharia's Imaging Centre

Bhaveshwar Vihar, 383, S.V.P. Road, Prarthana Samaj, Charni Road, Mumbai 400 004.