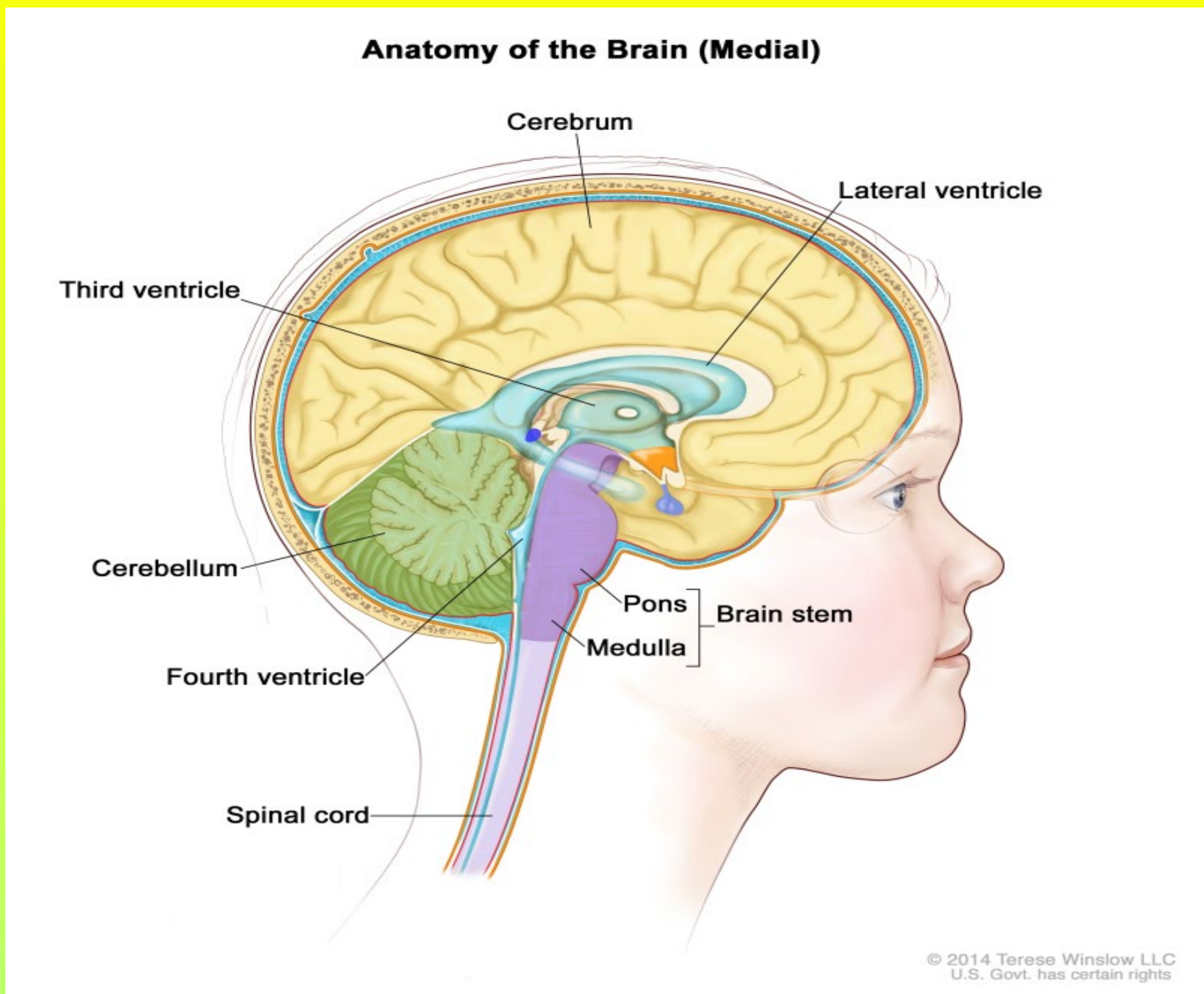


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Introduction



Background: Multiple sclerosis (MS) is a degenerative neurological disease in which the immune system attacks the central nervous system. During the attack, the protective sheath or myelin that covers nerve fibers is damaged or destroyed causing inflammation to the brain, optic nerve and/or spinal cord. This damage can lead to motor, cognitive and neurological concerns. Thus, it causes communication problems between the brain and the other parts of the body.¹⁶

Magnetic Resonance Imaging (MRI) is a crucial tool for analyzing disease presence and advancement. Patients with Multiple Sclerosis (MS) undergo periodic MRIs to monitor disease progression and treatment effectiveness. The scans specify lesion locations in the brain and spinal cord. The frequency of MRI scans varies depending on the individual's disease development and medication and treatment plan. Scans are normally conducted in a series from every six months to two years.

The thalamus, the area surrounding the third ventricle, is like a relay station for signaling pathways used for communicating signals for motor and cognitive skills, among others. Atrophy in this area, indicated by increased third ventricle width, may indicate a clinical decline in cognitive and motor abilities. The Montreal Cognitive Assessment (MoCA) test is a tool used to screen for mild cognitive impairments including memory, language, executive function, and attention. The thalamus, the area surrounding the third ventricle, is like a relay station for signaling pathways used for these cognitive skills.

Hypothesis: Patients with MS have a larger third ventricles will have a decrease in cognitive function associated with the MoCA test.

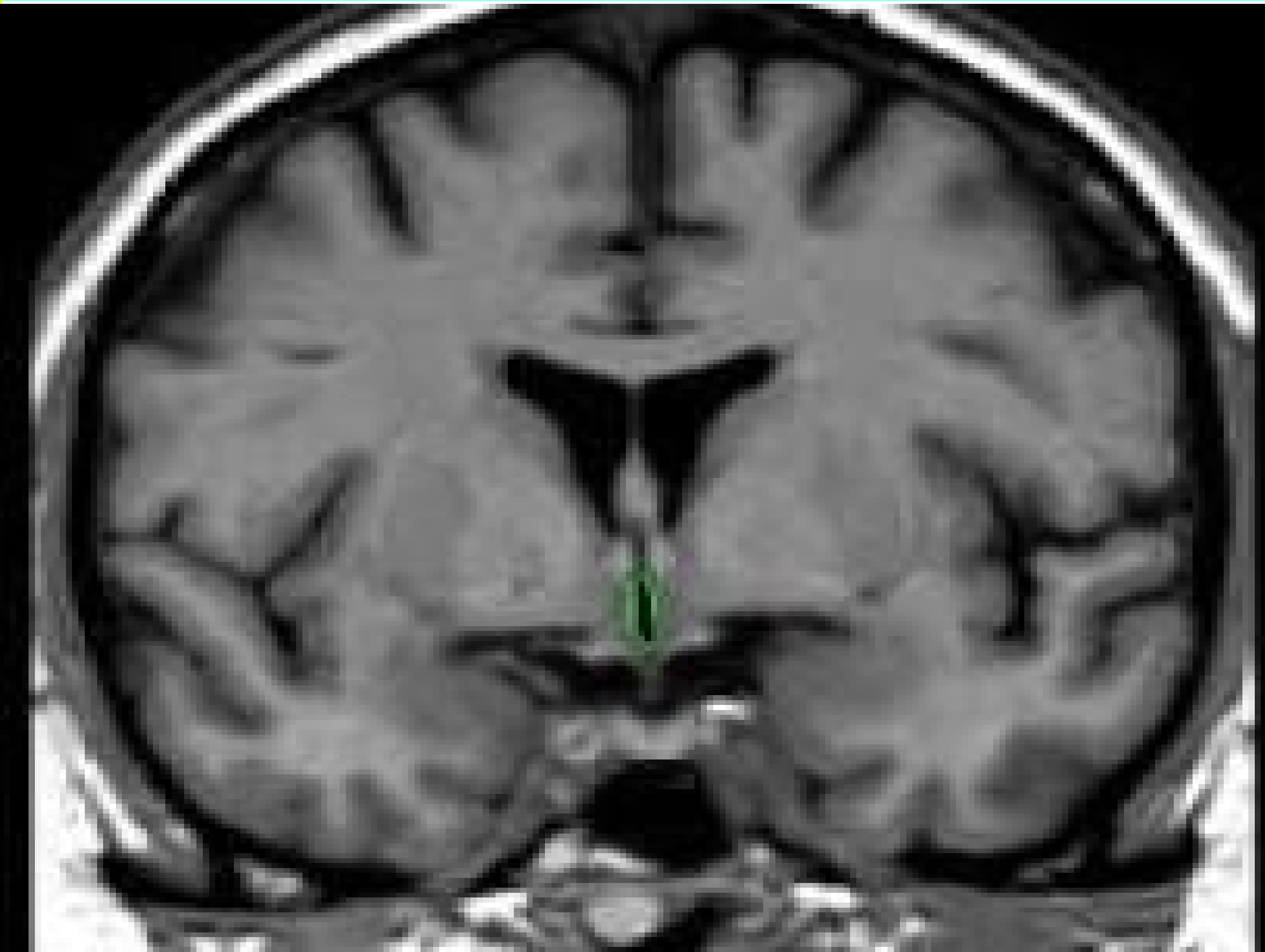
Purpose

To evaluate brain atrophy and predict neurological symptoms, particularly cognitive decline.

Objective

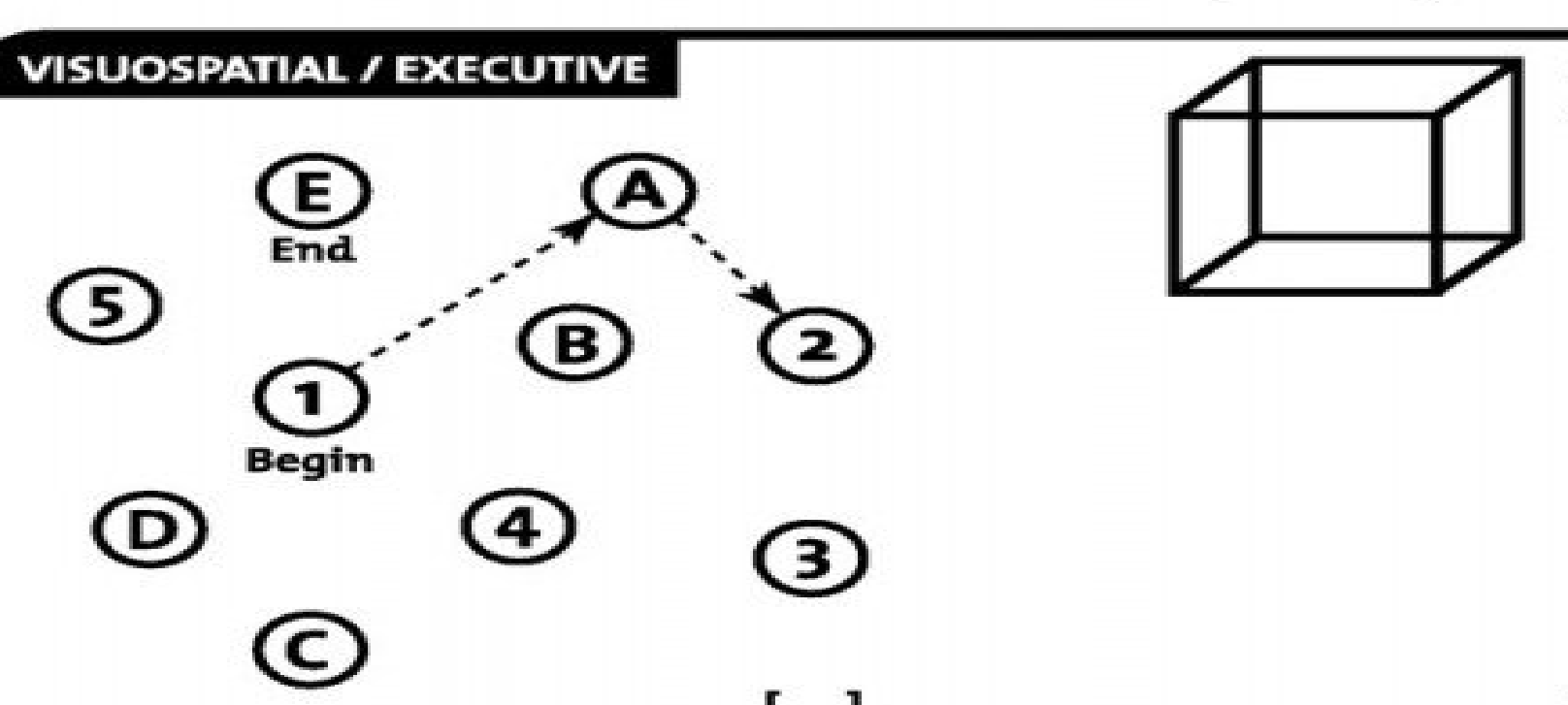
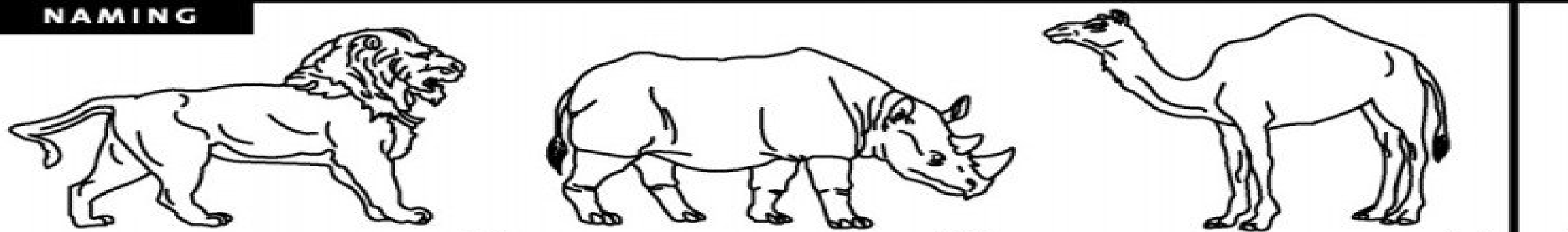
Our goal is to understand how 3rd ventricle width correlates to Multiple Sclerosis cognitive and physical degeneration.

Third Ventricle

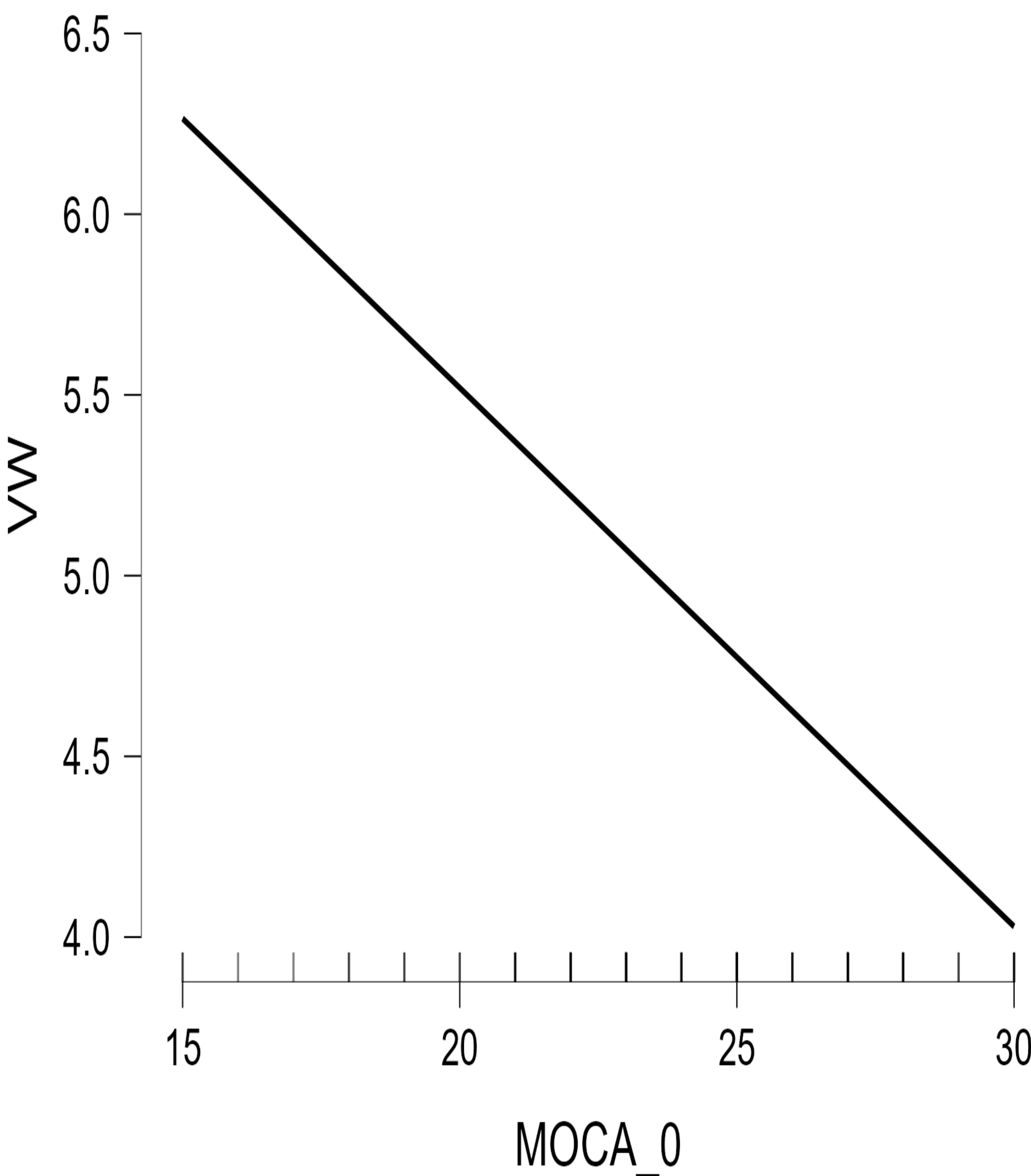


Methods

Methods: Of the 106 participants in the Louisiana State University Health Science Center (LSUHSC) MS study, seventy-six patients' ventricles were analyzed. The following areas were and measured: ventricle length (3VL), half length (3VL/2), width (3VW), horns (3VH) and bicaudate (3-Bic). These measurements were documented and compared to the MoCA test conducted on the participants.

MONTREAL COGNITIVE ASSESSMENT (MOCA)									
NAME : Education : Sex :					Date of birth : DATE :				
VISUOSPATIAL / EXECUTIVE					POINTS				
					Draw CLOCK (Ten past eleven) (3 points)				
					[] Contour [] Numbers [] Hands				
NAMING									
					[] [] []				
MEMORY									
Read list of words, subject must repeat them. Do 2 trials. Do a recall after 5 minutes.					FACE VELVET CHURCH DAISY RED				
					1st trial 2nd trial				
ATTENTION									
Read list of digits (1 digit/ sec.). Subject has to repeat them in the forward order [] 2 1 8 5 4									
Read list of letters. The subject must tap with his hand at each letter A. No points if ≥ 3 errors					[] 7 4 2				
Serial 7 subtraction starting at 100 [] 93 [] 86 [] 79 [] 72 [] 65									
4 or 5 correct subtractions: 3 pts, 2 or 3 correct: 2 pts, 1 correct: 1 pt, 0 correct: 0 pt									
LANGUAGE									
Repeat : I only know that John is the one to help today. [] The cat always hid under the couch when dogs were in the room. []									
Fluency / Name maximum number of words in one minute that begin with the letter F [] (N ≥ 11 words)									
ABSTRACTION									
Similarity between e.g. banana - orange = fruit [] train - bicycle [] watch - ruler									
DELAYED RECALL									
Has to recall words WITH NO CUE					FACE VELVET CHURCH DAISY RED				
Category cue									
Optional Multiple choice cue									
ORIENTATION									
[] Date [] Month [] Year [] Day [] Place [] City									
© Z.Nasreddine MD Version 7.0 www.mocatest.org Normal ≥ 26 / 30					TOTAL Add 1 point if ≤ 12 yr edu				
Administered by: _____									

Results



Conclusion

Pearson R correlates ventricle width with MoCA scores. This is a significant correlation between MoCA scores and third ventricle width (3VW). There is a negative association with the regression of disease and MoCA scores. As the 3VW increases MoCA scores decreases. As the 3VW increases this a marker of brain atrophy.

References

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