

# Annual conference EMSP

April 24–25, 2026  
Berlin, Germany

From Diagnosis to Access:  
Data-Driven Solutions for  
MS, NMO and MOGAD

Building Fairer Future for Patients

#EMSP2026



EUROPEAN  
MULTIPLE SCLEROSIS  
PLATFORM



Deutsche  
Multiple Sklerose  
Gesellschaft  
Bundesverband e.V.

# McDonald 2024 Criteria

## Biomarkers, and Challenges in Differentiating MS, NMOSD, MOGAD

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## Conflicts of interest:

Speaker / advisory honoraria:

Merck, Neuraxpharm, Novartis, Roche, Sanofi.

Research support:

DMSG Regional Association of NRW, Novartis.

Research collaborations:

MachineMD AG, CH.



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PLATFORM



# The journey to a diagnosis of Multiple Sclerosis (MS) – First scenario

“Typical clinical presentation“



Option 1: relapse

Option 2: progressive over at least 12 months

What was your first symptom?  
(word cloud) - sli.do

# The journey to a diagnosis of Multiple Sclerosis (MS) – First scenario

“Typical clinical presentation”



Option 1: relapse

Option 2: progressive over at least 12 months



Still valid!

Why new criteria then?

- Evidence for novel biomarkers to aid early diagnosis
- Case ascertainment in thus far unclear cases, with high specificity
- Definition of requirements in special populations

# The known toolbox



No better explanation

Check for other diagnoses than MS

**Dissemination**

Space (DIS)

Time (DIT)

**Biomarkers**

(2nd attack)

**MRI:**  
lesion/s in 2 of 4 regions

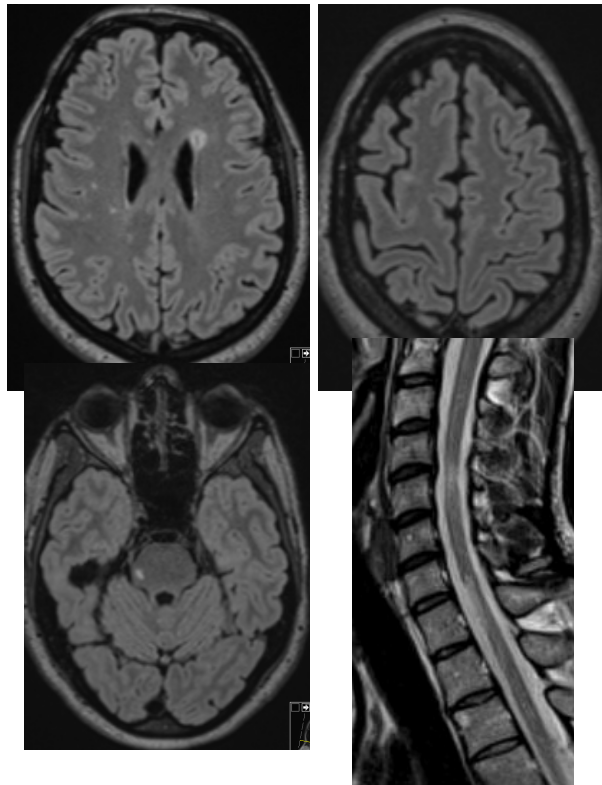
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(2nd attack)

**Cerebrospinal fluid (CSF):**  
CSF-restricted oligoclonal bands (OCB+)

**MRI:**

- 1 scan, lesions with and without contrast enhancement **OR**
- Follow-up scan with new lesion/s



**PPMS**

2 of 3 criteria:

- 1 brain region
- 2 spinal lesions
- CSF: OCB+

Thompson et al. Lancet Neurol 2017; Montalban et al. Lancet Neurol. 2025

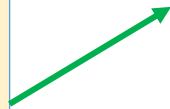
# Additions of the revised criteria



**Dissemination**

Space (DIS)

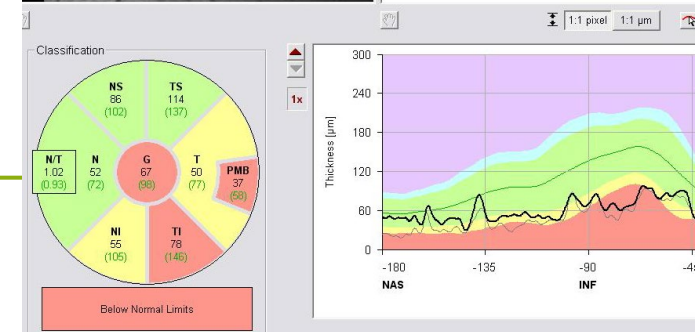
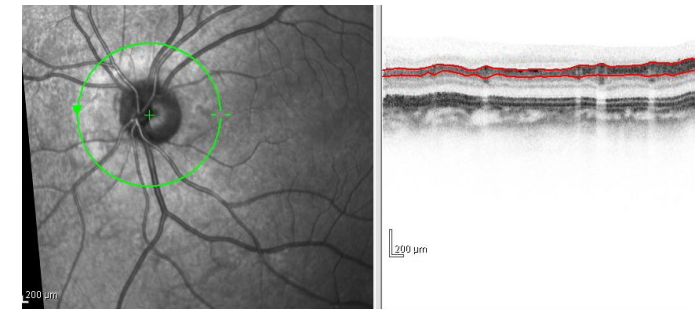
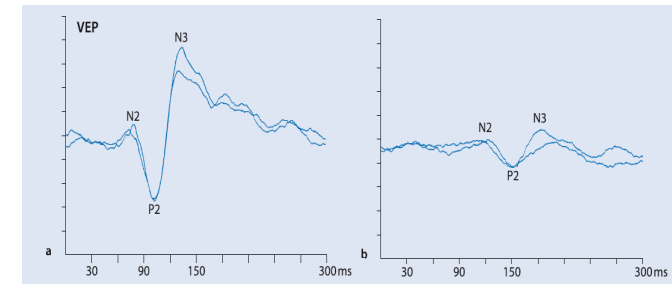
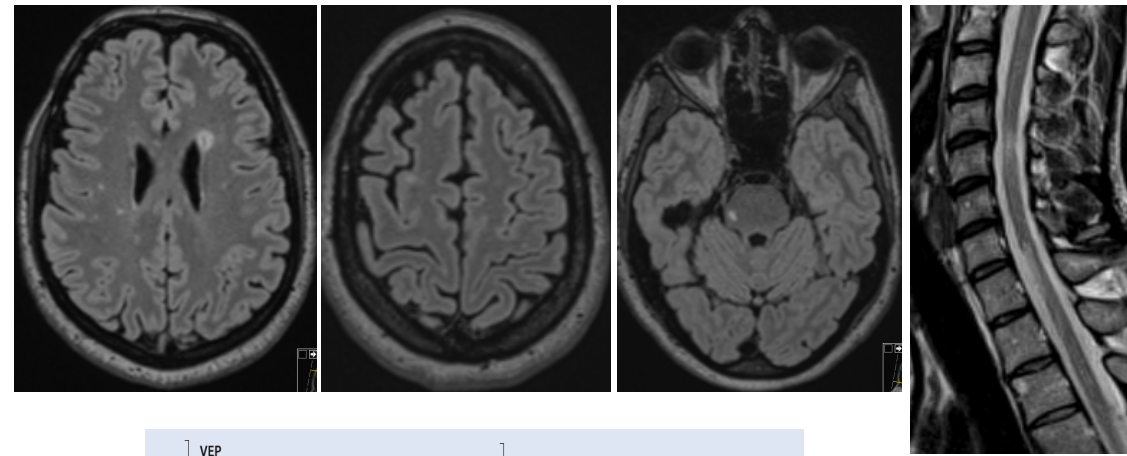
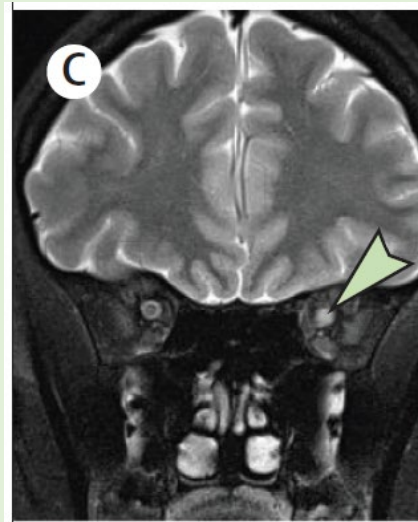
Time (DIT)



**New biomarkers**

**MRI:**

5 regions:  
optic nerve manifestation added



**RUB**

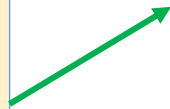
# Additions of the revised criteria



## Dissemination

Space (DIS)

Time (DIT)

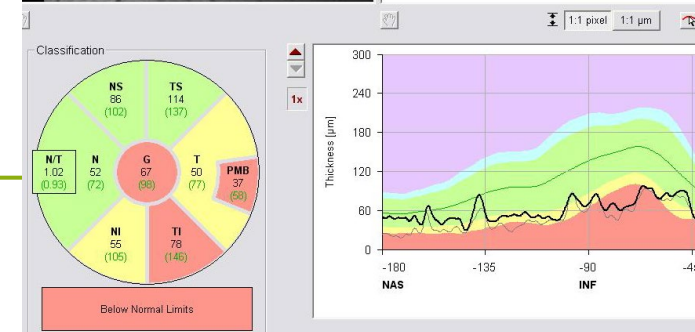
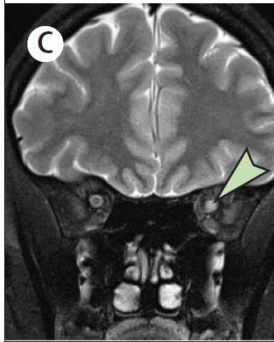
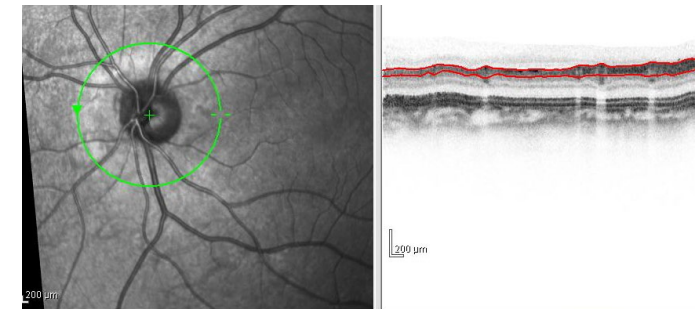
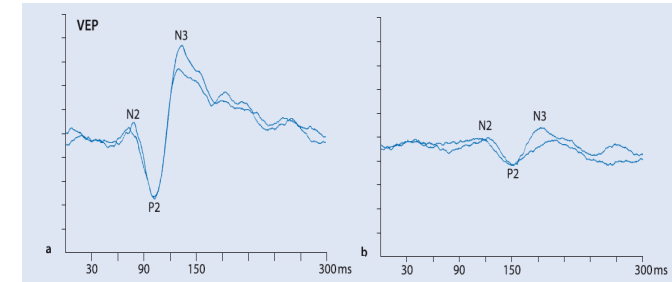
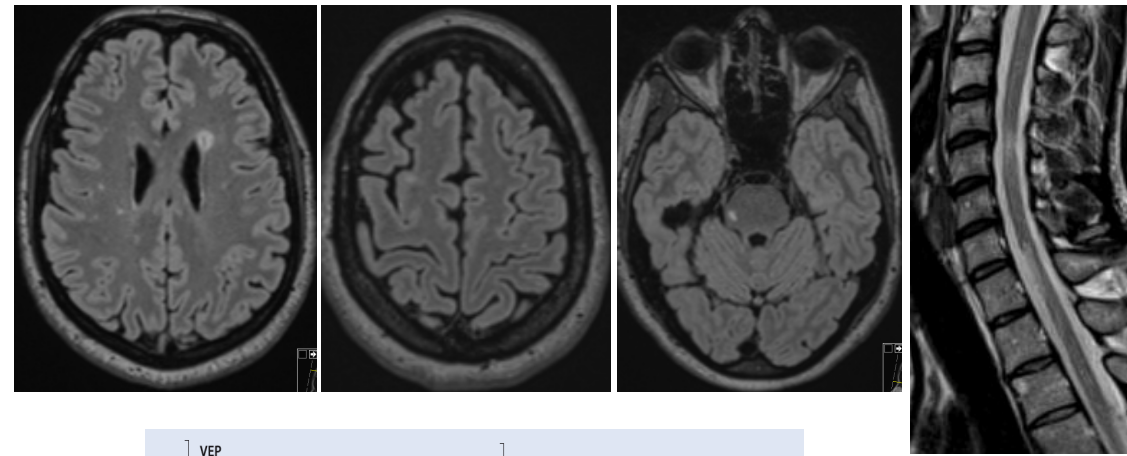


## New biomarkers

**MRI:**  
5 regions:

**When 4 of 5 regions are affected, DIT (or other additional features) are not necessary!**

**For PPMS, 2 spinal cord lesions are sufficient for DIS!**



# Additions of the revised criteria



## Dissemination

Space (DIS)

Time (DIT)

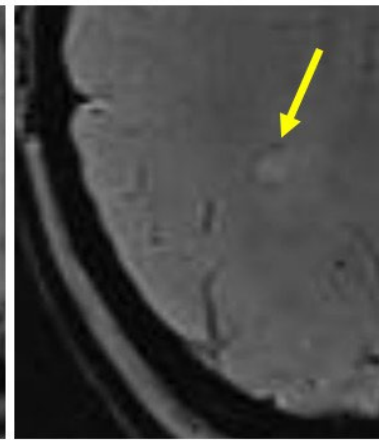
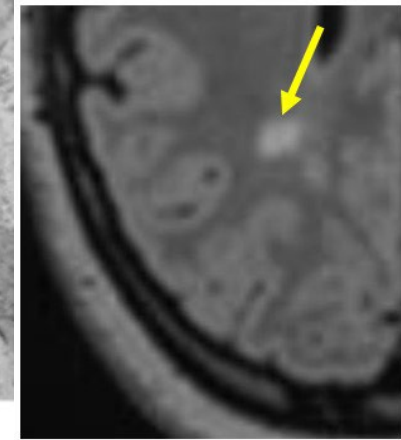
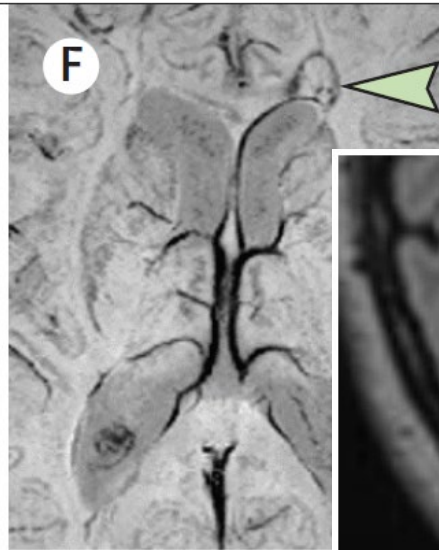
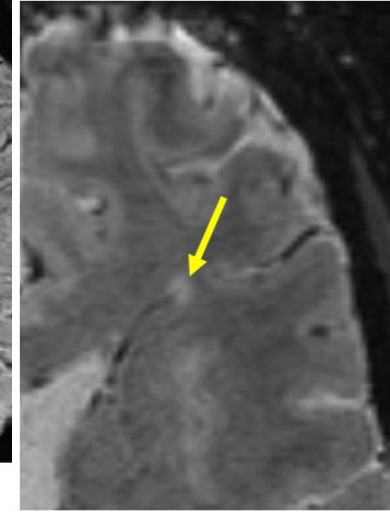
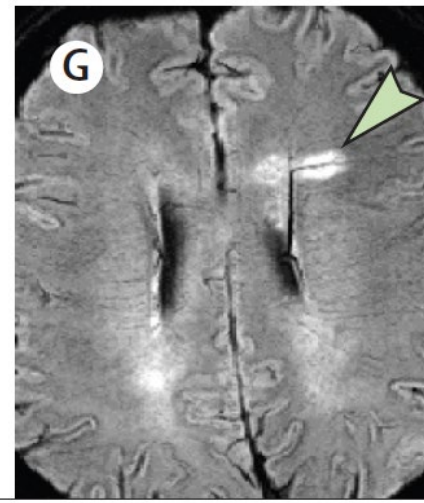


## New biomarkers

### MRI:

Central Vein Sign (CVS)  
( $\geq 6$ )

Paramagnetic Rim Lesion (PRL)  
( $\geq 1$ )



# Additions of the revised criteria



## Dissemination

Space (DIS)

Time (DIT)

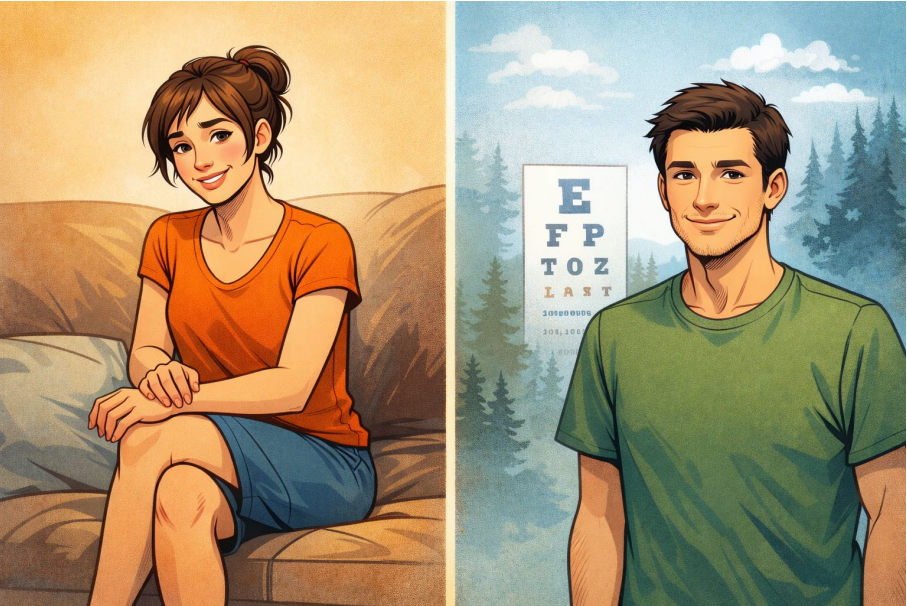
## New biomarkers

### CSF:

Kappa Free Light Chain (KFLC)  
Index (CSF/serum)  
can be used  
equivalent  
to the detection of OCB

# The journey to a diagnosis of Multiple Sclerosis (MS) – 2nd scenario

No or atypical presentation



MRI performed for other reasons than suspicion of MS

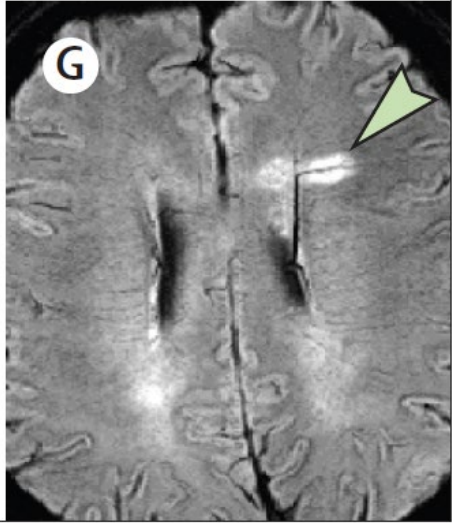


**Radiologically Isolated Syndrome (RIS)**

**Novelty:**

**RIS may be diagnosed as preclinical MS under certain conditions.**

- DIS and DIT
- DIS and OCB/KFLC
- DIS and CVS-6
- (but not PRL)



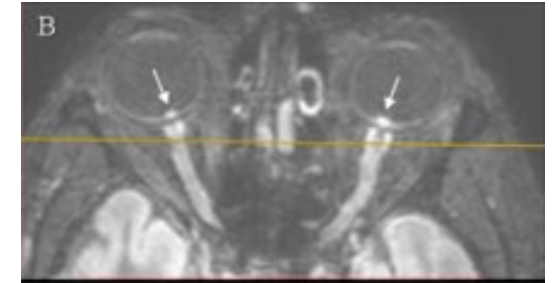
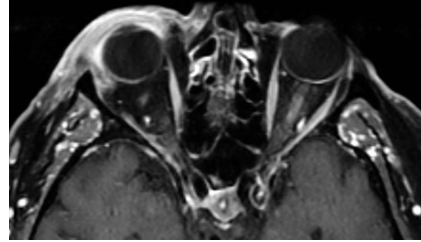
# Clarifications of the revised criteria

- Paraclinical diagnostic measures (esp. MRI) are required to diagnose MS.
  - **Patient safety against misdiagnosis!**
- MS represents a biological spectrum ranging from preclinical to progressive syndromes. The criteria thus provide a unique framework over different disease phenotypes.

- Persons over 50 years of age at first presentation / with comorbidities (cardiovascular, risk factors, headache disorders):
  - Spinal cord involvement
  - OCB or KLFC positive
  - CVS-6

- Children and adolescents:
  - Distinction of recurrent vs. monophasic
  - Testing of MOG-antibodies always when  $\leq 12$  years of age
  - $> 12$  years of age only, when suspected

# Clarifications of the revised criteria – Differential diagnosis of optic nerve involvement



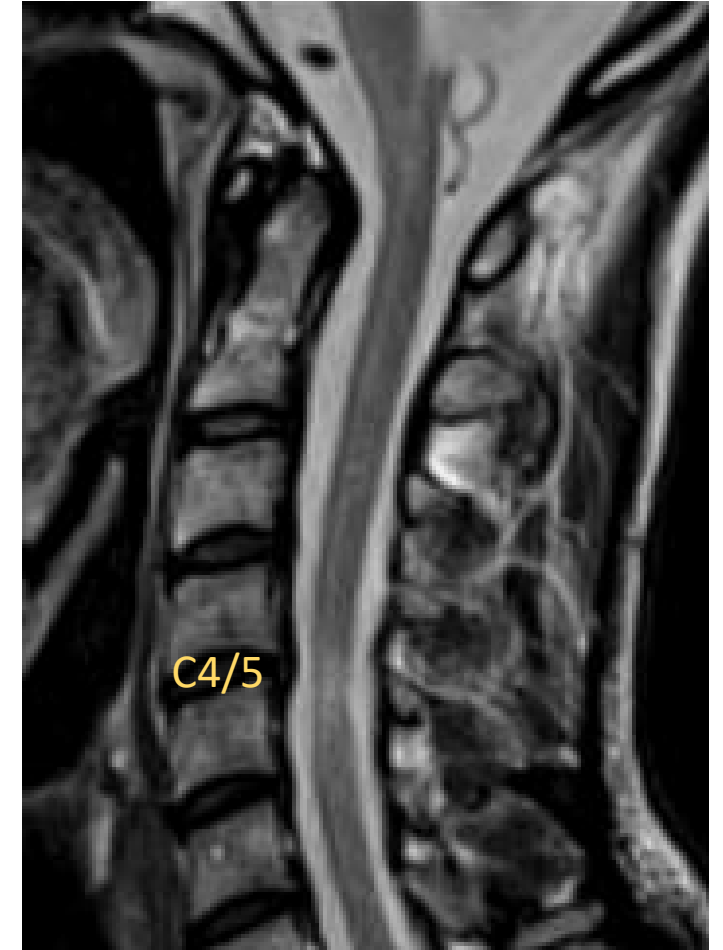
	Multiple Sclerosis	AQP4-ab+ NMOSD	MOGAD
Optic nerve	Mostly unilateral Short Near to eye bulb Nerve swelling frequent	Bilateral in 15-35% Long (> 50% of optic nerve) Near to chiasm/brain Nerve swelling frequent	Bilateral in 30-60% Long (> 50% of optic nerve) Near to eye bulb Nerve swelling frequent
Optic disc / perineuritis	Extremely rare	Infrequent / extremely rare	20-50% / 50%
Optic chiasm	Rarely involved	≈20%, usually isolated	≈15% (extended neuritis)
Brain lesions	Typical of MS	Not typical of MS	No lesions in 50%, rarely typical of MS

- AQP4-ab+ - aquaporin-4 antibody positive
- NMOSD - neuromyelitis optica spectrum disorder
- MOGAD - myelin-oligodendrocyte glycoprotein antibody associated disease

## ... an example

44-year-old woman, spring 2025

- “mild” sensory symptoms left arm, partially provoked by head movement
- What next?
- Orthopedic consultation
- MRI scan, cervical spine, without contrast agent



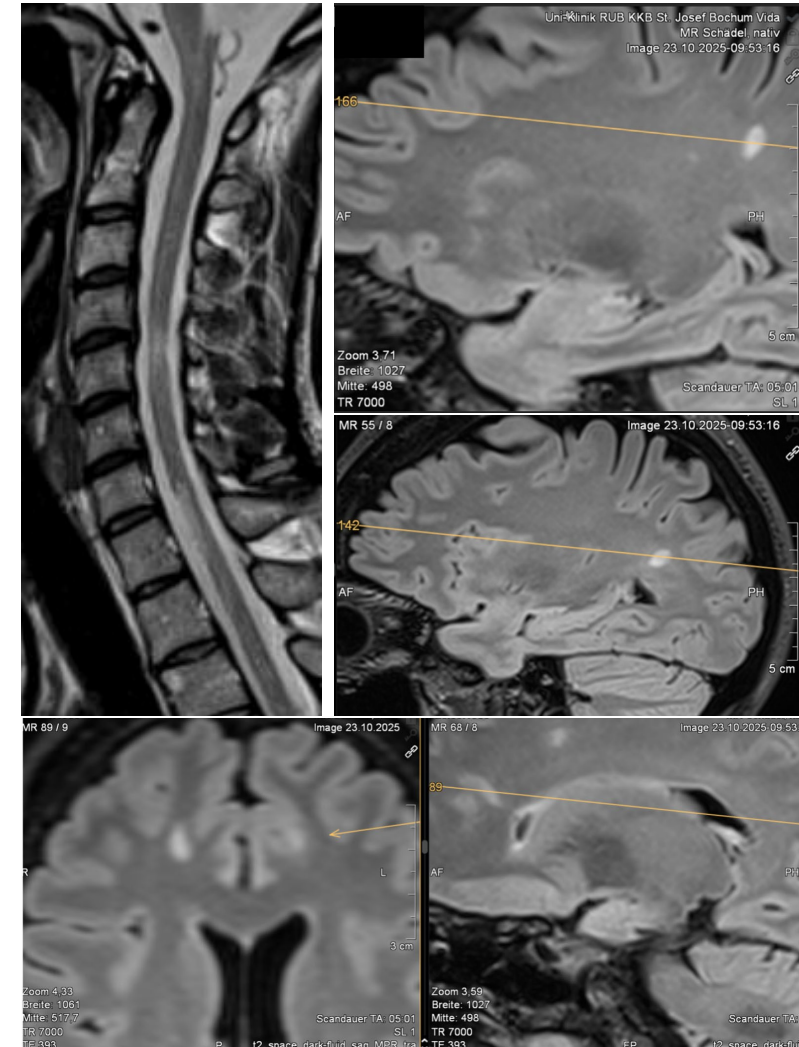
## ... an example

44-year-old woman, symptoms in spring 2025

- Neurological work-up 5 (!) months later
  - Clear clinical impairments incl. motor function
  - OCB negative (reasons?)
  - MRI: no contrast enhancement
  - Optic nerve evaluation: not done

### McDonald 2017:

- DIS 
- DIT 

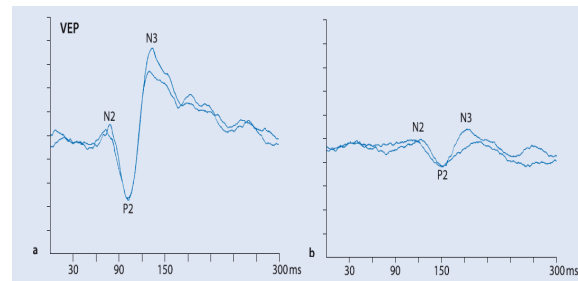
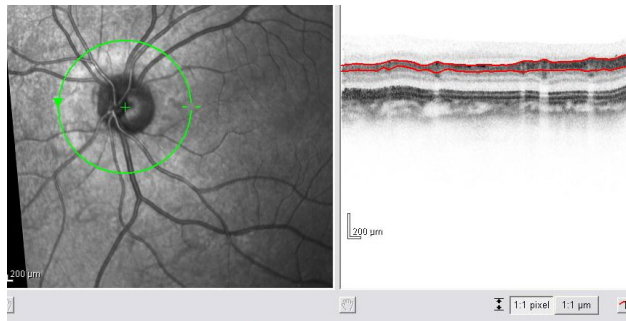


## ... an example

44-year-old woman, symptoms in spring 2025



- Addition of the novel biomarkers:
  - Testing for KFLC: not possible without another lumbar puncture
  - Optic nerve evaluation:



Interocular difference



**McDonald 2024** 

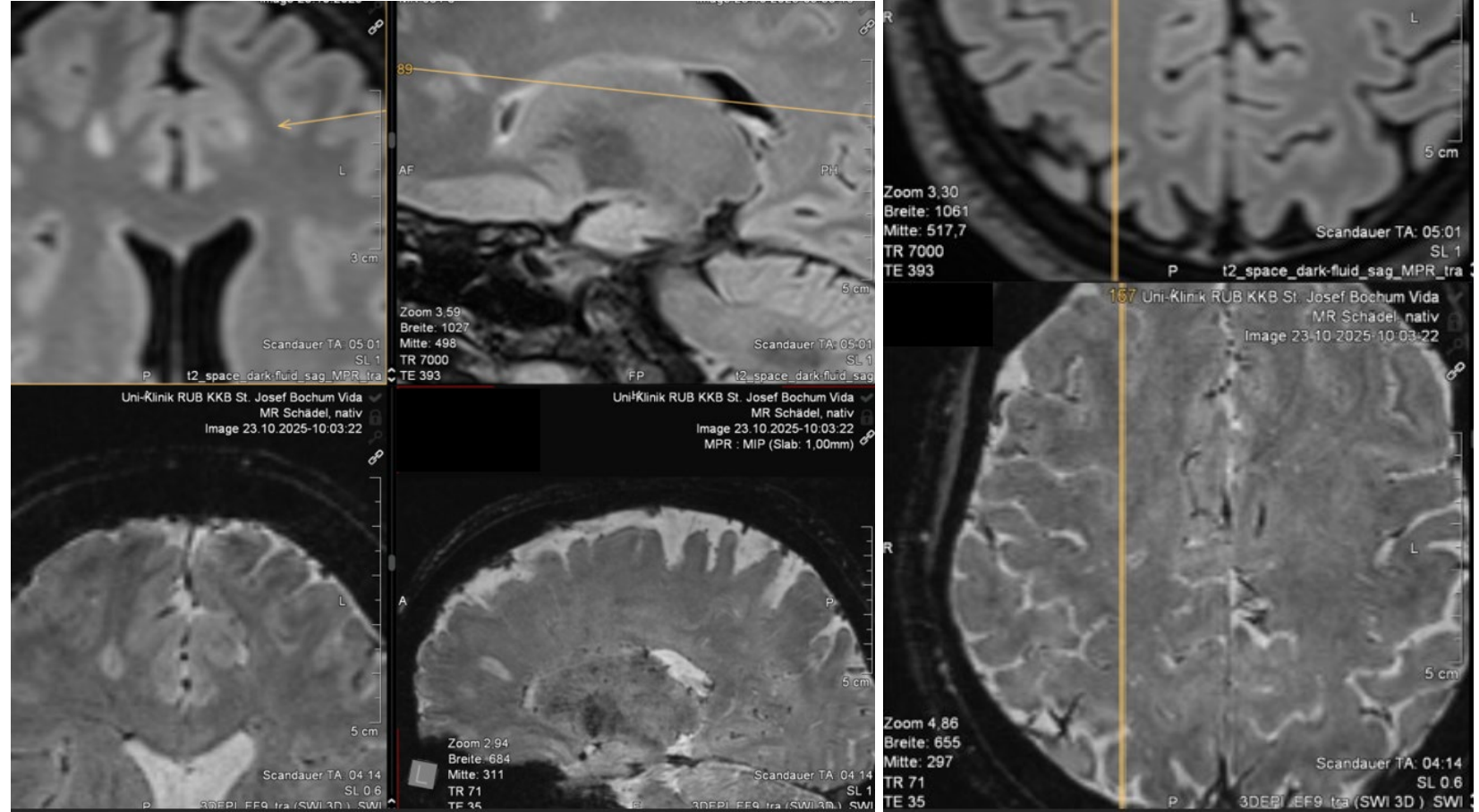
- 4 regions involved – ~~DIT~~

# ... an example

- MRI biomarkers:

**McDonald  
2024**

- 9 CVS 🍌

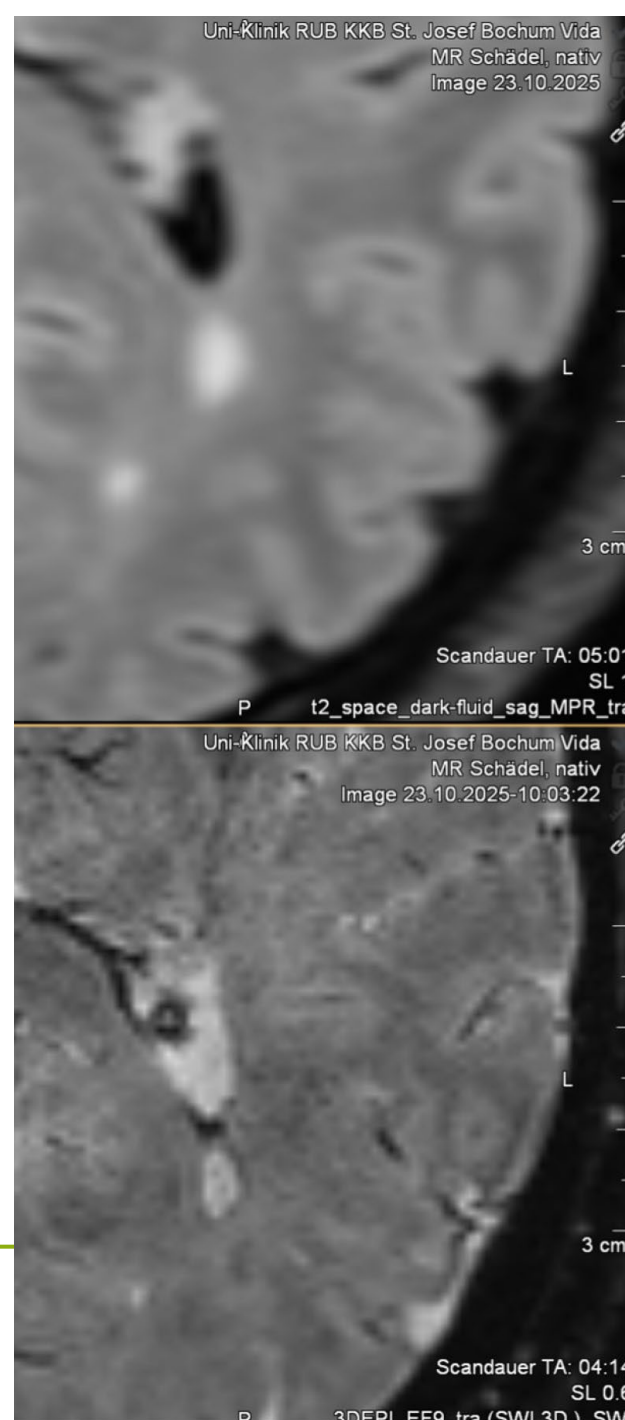


## ... an example

- MRI biomarkers:

### McDonald 2024

- 2 PRL 🍷



## What is the point here?

- Diagnosis can be delayed for various reasons
- Novel criteria may help to overcome diagnostic delays and reduce additional interventions
- Treatment may be initiated earlier

# Thank you!

Contact: [anke.salmen@rub.de](mailto:anke.salmen@rub.de)



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