Prognosis of multiple sclerosis

DEFINITION

- Multiple sclerosis (MS) is a chronic disease that usually begins in young adults.
- Patholigcally, it is characterized by multiple areas of CNS white matter inflammation,demyelination, and glial scarring (sclerosis).

- MS is more common among women than men, with an incidence of 1.4 to 3.1 times as many women than men affected.
- In patients with later onset of MS, the sex ratio tends to be equal.
- **In** general the disease increases in frequency with latitude in both the northern and southern hemispheres, although the rates tend to decrease above 65 north or south.

ETIOLOGY AND PATHOGENESIS

Genetic Susceptibility: •

Siblings of M.S patients have a risk of about 2.6%, parents a risk of about 1.8%, and children a risk of about 1.5%. first-, second, and third-degree relatives also have a higher risk.

Overall, about 15% of patients with MS have an affected relative.

Data from twin studies indicate a concordance rate of about 25% in monozygotic twins and of only 2.4% for same-sex dizygotic twins.

- In whites, the class II haplotype DR15, DQ6, Dw2 is associated with increased risk of MS.

1. Relapsing-remitting MS: *Clearly defined relapses with full recovery or with sequelae and residual deficit on recovery. The periods between disease relapses are characterized by a lack of disease progression.*

2. Primary-progressive MS: *Disease progression from onset with occasional plateaus and temporary minor improvements allowed.*

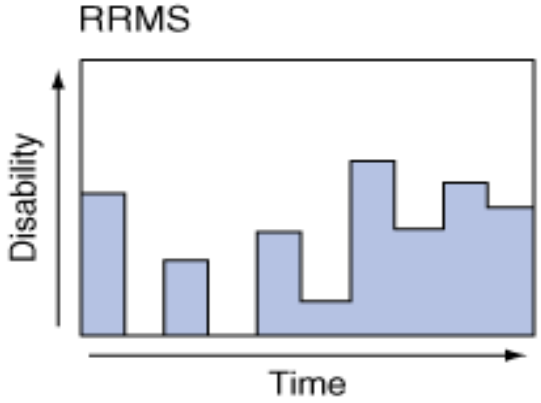
3. Secondary-progressive MS: *Initial relapsing-remitting disease course followed by progression with or without occasional relapses, minor remissions, and plateaus.*

4. Progressive-relapsing MS: *Progressive disease from onset, with clear acute relapses, with or without full recovery. The periods between relapses are characterized by continuing progression.*

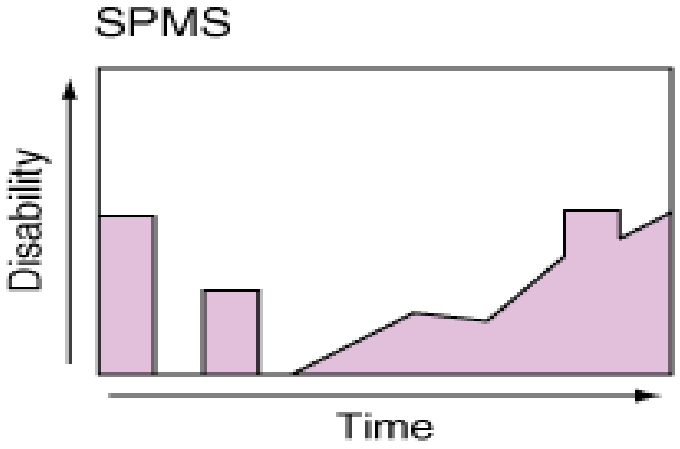
Clinical course of multiple sclerosis (MS).

A. Relapsing/remitting MS. **B.** Secondary progressive MS.

C. Primary progressive MS. **D.** Progressive/relapsing MS.



A



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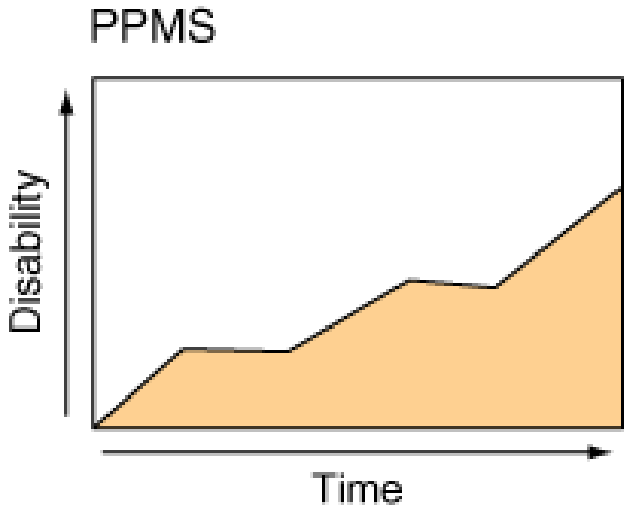

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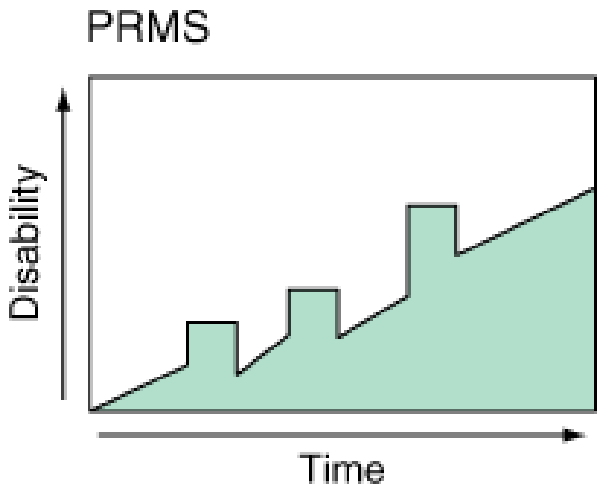

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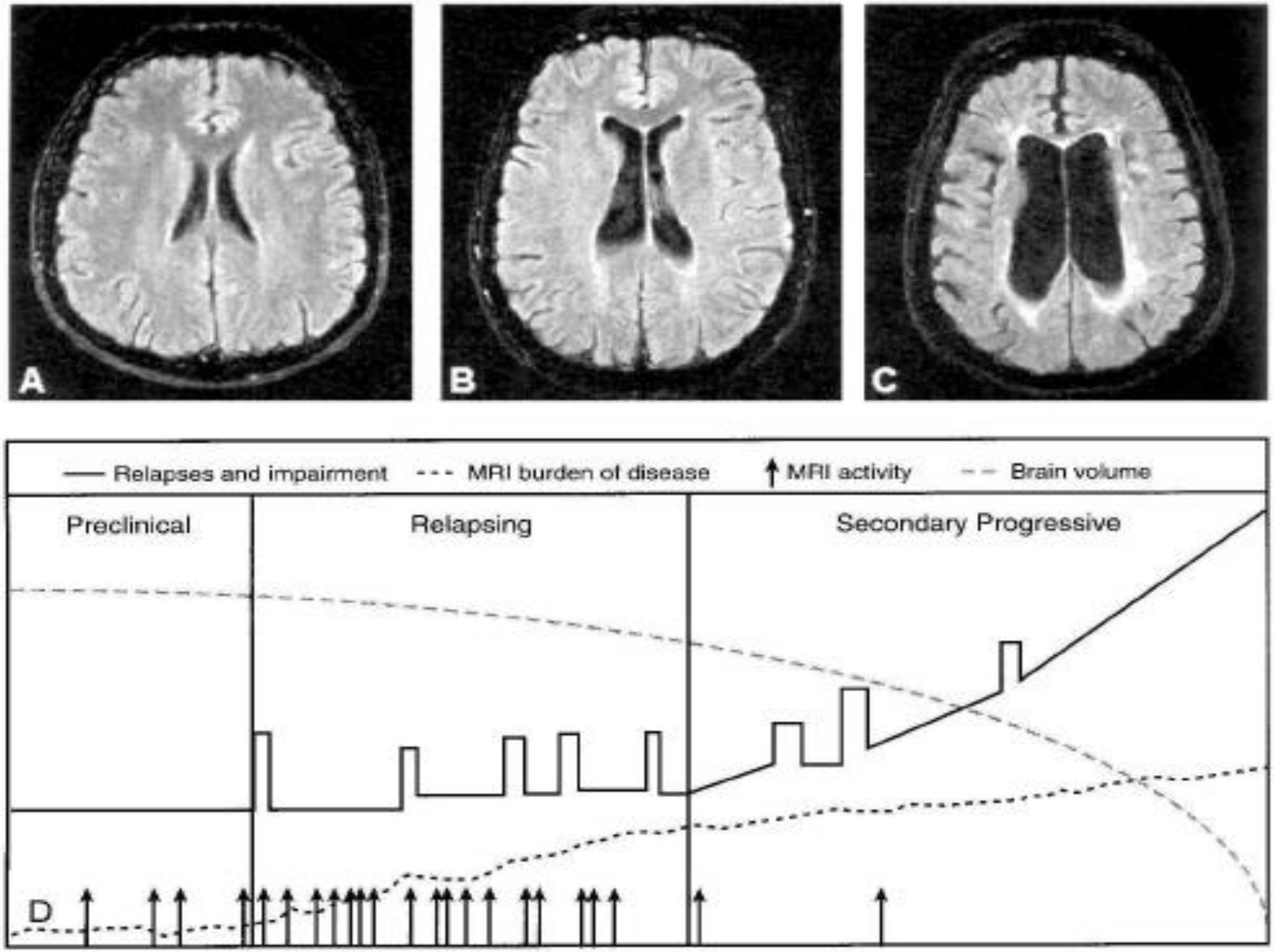
A
B
C
Relapses and impairment
MRI burden of disease
MRI activity
Brain volume
Preclinical
Relapsing
Secondary Progressive
D

MS prognosis

(1) Benign MS

the patient remains fully functional in all neurological systems 15 years after the disease onset.

(2) malignant MS

a rapid progressive course,leading to significan disability in multiple neurological systems or death in a relatively short time after disease onset.

Classification & Prognosis

Prognostic Factors in Patients with Multiple Sclerosis

Good Prognosis

- Optic Neuritis
- Isolated sensory symptoms
- Long interval to second relapse
- No evidence of disability after 5 years
- Female gender

Poor Prognosis

- 'Multifocal' Clinically Isolated Syndrome
- Efferent (motor/cerebellar) systems
- High relapse rate in 5 years
- Substantial disability after 5 years
- Abnormal MRI with heavy lesion load
- Male gender

MRI Prognostic Factors

Overall activity[a-c]	• Predicts relapses • Predicts brain atrophy
T2 lesion load[d]	• Predicts relapses and long-term disability
Cortical lesions[e]	• Predicts long-term disability
Spinal cord atrophy[f]	• Predict EDSS
Thalamic atrophy and ventricular size[g]	• Predicts conversion from CIS to clinically definite MS
fMRI[h]	• Correlates with cognitive dysfunction
MT MRI[i]	• Predicts long-term disease evolution

a. Kappos L, et al. *Lancet*. 1999;353:964-969; b. Sormani MP, et al. *Neurology*. 2007;69:1230-1235; c. Paolillo A, et al. *J Neurol*. 2004;251:432-439; d. Fisniku LK, et al. *Brain*. 2008;131:808-817; e. Calabrese M, et al. *Ann Neurol*. 2010;67:376-383; f. Rocca MA, et al. *Neurology*. 2011;76:2096-2102; g. Zivadinov R, et al. *Radiology*. 2013;268:831-841; h. Rocca MA, et al. *AJNR Am J Neuroradiol*. 2010;31:1240-1246; i. Agosta F, et al. *Brain*. 2006;129:2620-2627.