Review: Multiple Sclerosis

Christian-Albrechts-Universität zu Kiel
Philosophische Fakultät

Multiple sclerosis

Alastair Compston, Alasdair Coles

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Department of Clinical Neurosciences, University of Cambridge Clinical School, Addenbrooke's Hospital, Cambridge, UK
(A Compston FRCP, A Coles FRCP)

Correspondence to:
Dr Alasdair Coles, University of Cambridge Clinical School, Addenbrooke's Hospital, Hills Road, Cambridge CB2 2QQ, UK
ajc1020@medschl.cam.ac.uk

Multiple sclerosis is primarily an inflammatory disorder of the brain and spinal cord in which focal lymphocytic infiltration leads to damage of myelin and axons. Initially, inflammation is transient and remyelination occurs but is not durable. Hence, the early course of disease is characterised by episodes of neurological dysfunction that usually recover. However, over time the pathological changes become dominated by widespread microglial activation associated with extensive and chronic neurodegeneration, the clinical correlate of which is progressive accumulation of disability. Paraclinical investigations show abnormalities that indicate the distribution of inflammatory lesions and axonal loss (MRI); interference of conduction in previously myelinated pathways (evoked electrophysiological potentials); and intrathecal synthesis of oligoclonal antibody (examination by lumbar puncture of the cerebrospinal fluid). Multiple sclerosis is triggered by environmental factors in individuals with complex genetic-risk profiles. Licensed disease modifying agents reduce the frequency of new episodes but do not reverse fixed deficits and have questionable effects on the long-term accumulation of disability and disease progression. We anticipate that future studies in multiple sclerosis will provide a new taxonomy on the basis of mechanisms rather than clinical empiricism, and so inform strategies for improved treatment at all stages of the disease.

Aufgabe 1: Symptome und Diagnose

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Abschnitt „Diagnosis“ S. 1502-1503:

1a) Nennt einige der Hauptsymptome der MS und deren Verortung im Nervensystem (Tabelle 1).

- Was ist das Lhermitte-Symptom?
- Was ist das Uthoff-Phänomen?
- Haben Sie Ideen zur Erklärung der beiden Phänomene?

Tabelle 1
Ausschnitt aus Tabelle 1 aus dem Paper von Compston & Coles (2008, S.1503)

	Symptoms	Signs
Cerebrum	Cognitive impairment	Deficits in attention, reasoning, and executive function (early); dementia (late)
	Hemisensory and motor	Upper motor neuron signs
	Affective (mainly depression)	
	Epilepsy (rare)	
	Focal cortical deficits (rare)	
Optic nerve	Unilateral painful loss of vision	Scotoma, reduced visual acuity, colour vision, and relative afferent pupillary defect
Cerebellum and cerebellar pathways	Tremor	Postural and action tremor, dysarthria
	Clumsiness and poor balance	Limb incoordination and gait ataxia
Brainstem	Diplopia, oscillopsia	Nystagmus, internuclear and other complex ophthalmoplegias
	Vertigo	
	Impaired swallowing	Dysarthria
	Impaired speech and emotional lability	Pseudobulbar palsy
	Paroxysmal symptoms	
Spinal cord	Weakness	Upper motor neuron signs
	Stiffness and painful spasms	Spasticity
	Bladder dysfunction	
	Erectile impotence	
	Constipation	
Other	Pain	
	Fatigue	
	Temperature sensitivity and exercise intolerance	

Aufgabe 1: Symptome und Diagnose

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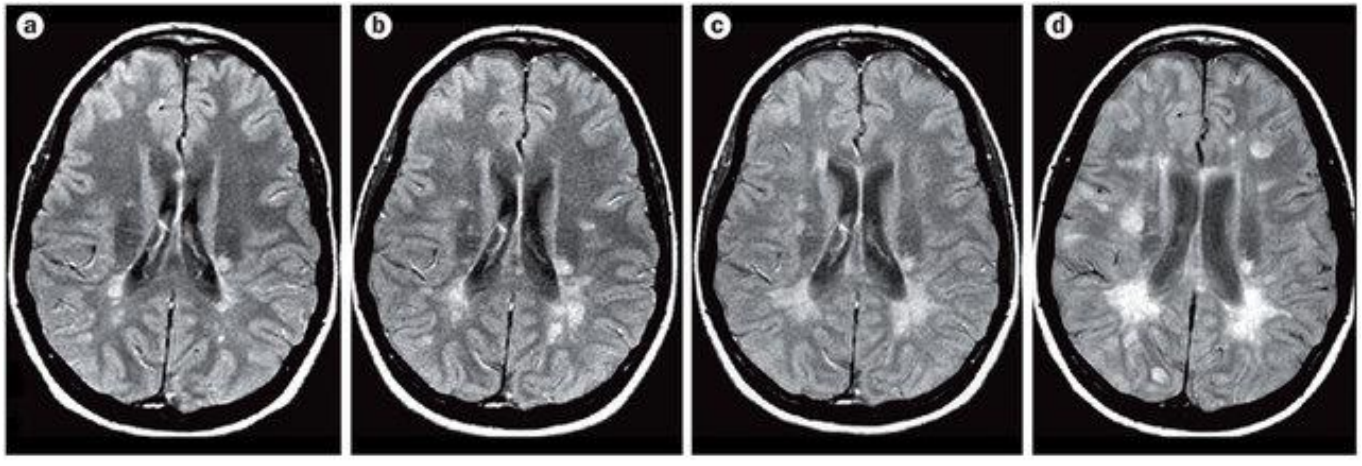
Abschnitt „Diagnosis“ S. 1502-1503:

1b) Welche Rolle spielt das MRT bei der Diagnosestellung?

Abbildung 10
MRT-Scans eines Patienten mit RRMS



Rovira et al., 2015

Aufgabe 2: Krankheits-Mechanismen

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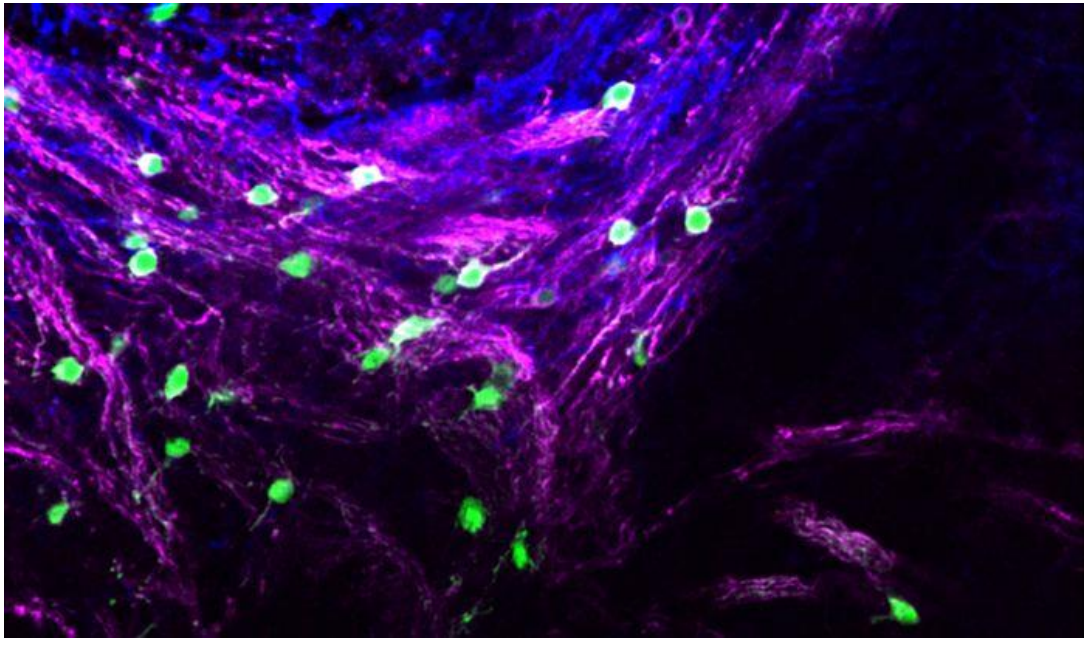
2a) Abschnitte „Disease mechanism“ und „Pathophysiology“, S. 1506-1509:

Was sind das zentrale Kennzeichen von MS und was sind die daran beteiligten Mechansimen?

Abbildung 11
eGFP-fluoreszente Oligodendrozyten im Corpus Callosum



Aufgabe 2: Krankheits-Mechanismen

Christian-Albrechts-Universität zu Kiel
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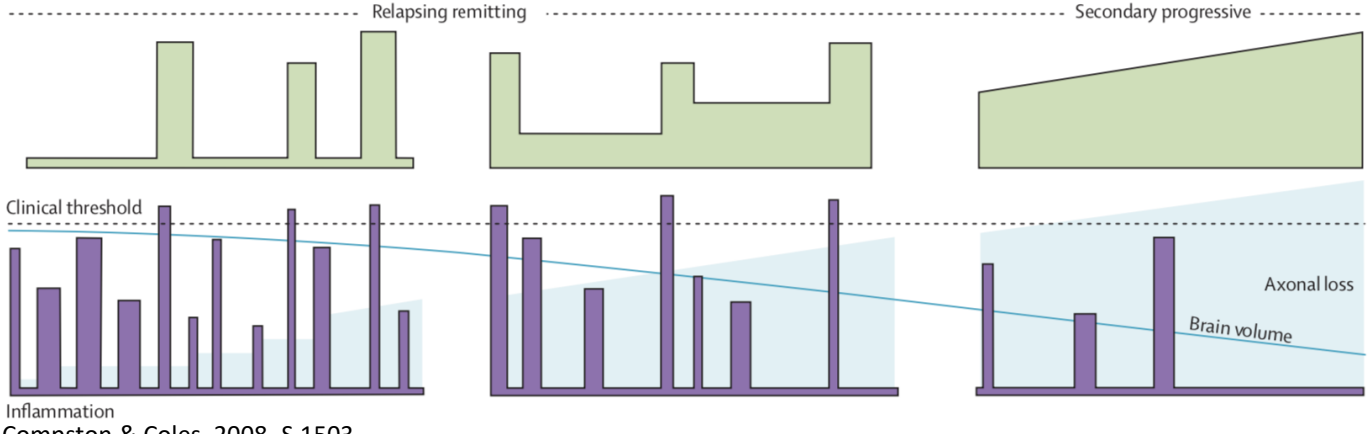
2b) Abschnitte „Disease mechanism“ und „Pathophysiology“,

S. 1506-1507 & 1507 (ganz unten links) –1509:

Erklärt die dargestellten klinischen Verlaufsformen der MS und die zugrundeliegenden Prozesse anhand der Abbildung.

Abbildung 12
Klinische Verlaufsformen der MS.



Compston & Coles, 2008, S.1503

Welche Erklärungen werden angeboten für:

- das Lhermitte-Symptom?
- das Uthoff-Phänomen?

Aufgabe 3: Umweltfaktoren

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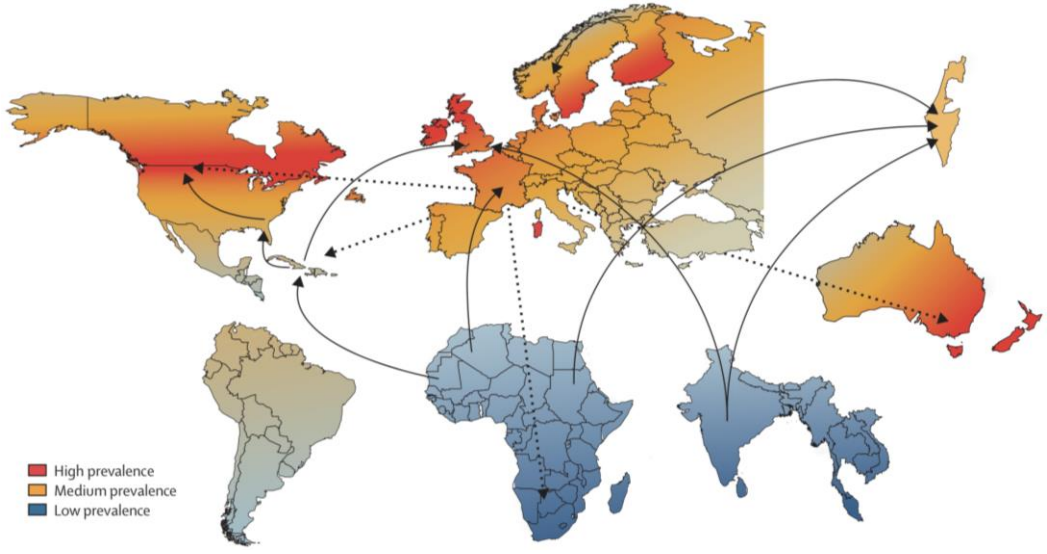
Abschnitt „environmental factor“, S. 1504 - 1505:

3a) Wo finden sich regionale Häufungen von MS?

3b) Welche Rolle spielt dabei das Alter?

3c) Was ist die Hygiene-Hypothese?

Abbildung 13
Verbreitung der MS



Compston & Coles, 2008, S.1505