

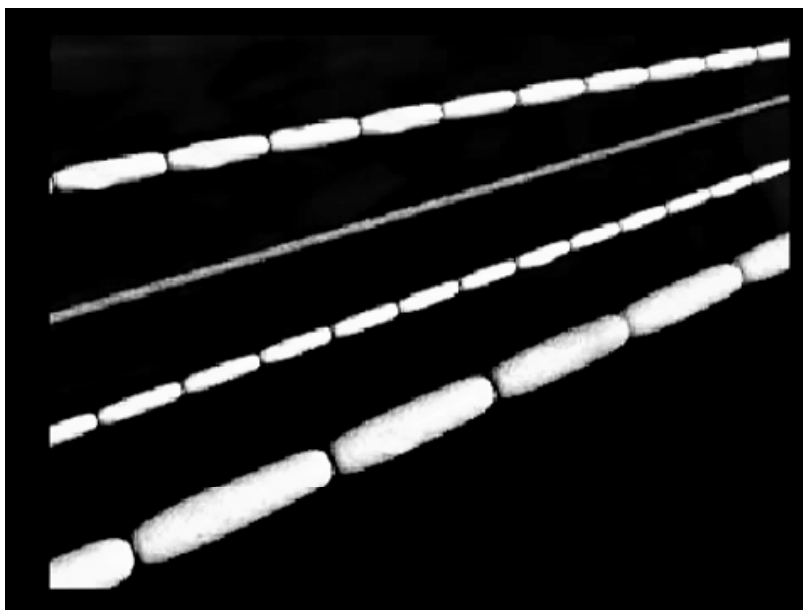
# Choosing a Treatment for New Diagnosis of MS

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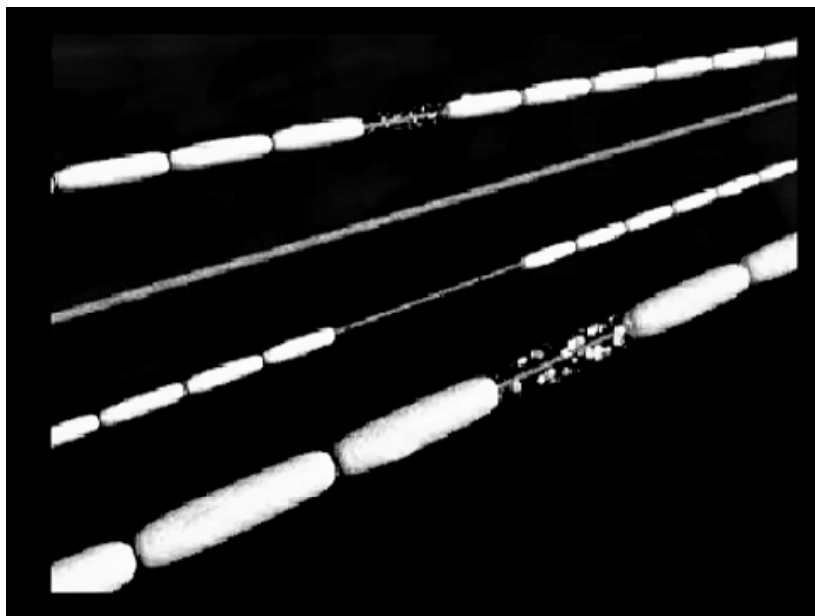
## Multiple Sclerosis

- Inflammation
- Demyelination
- Axonal damage
- Relapses
- Progression
- Immune system dysfunction
- Causes damage in the brain and spinal cord

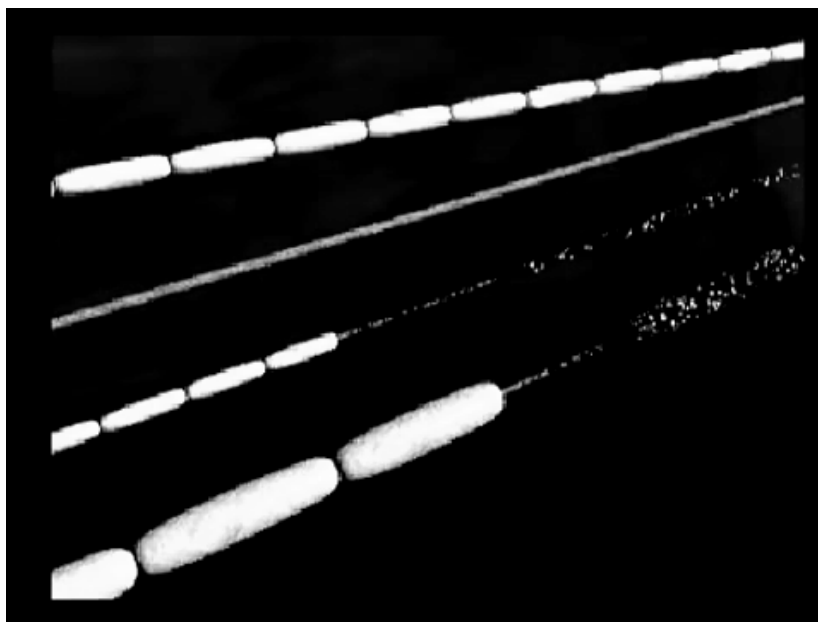
## Normal Nerve Conduction



## Mild to Moderate Demyelination



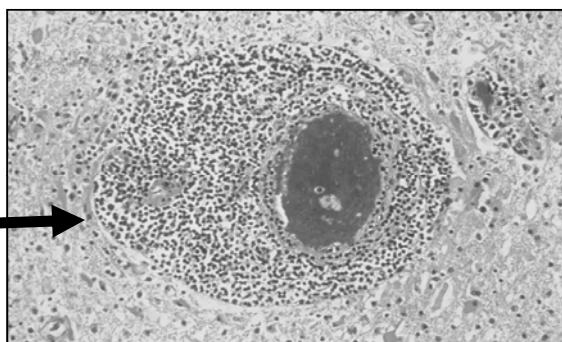
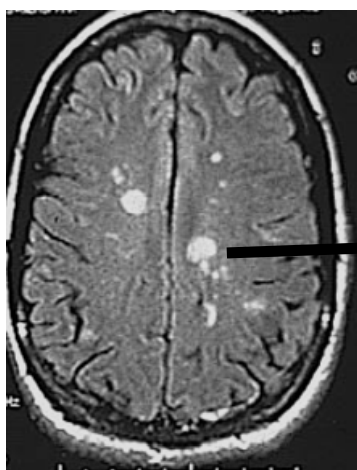
## Severe Demyelination and Axonal Damage



## Immune Dysregulation

- In MS, the immune system:
  - Loses the ability to distinguish self from non-self
  - Some confused immune cells “see” myelin as if it is an infection
  - This confusion and subsequent misguided immune activity leads to damage in the brain and spinal cord
  - Symptom of MS begin to appear

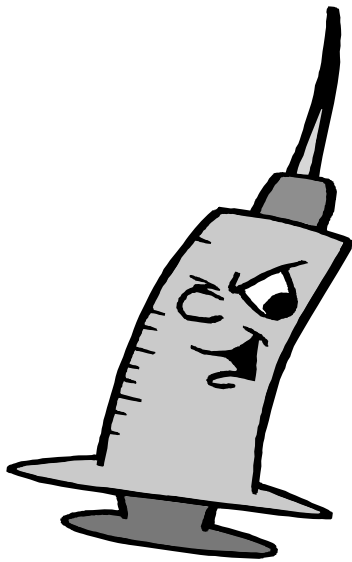
## Pathology of MS



Perivascular Inflammation

Dhib-Jalbut, S.

## Current Therapies for MS Used to Modulate or Suppress the Immune System



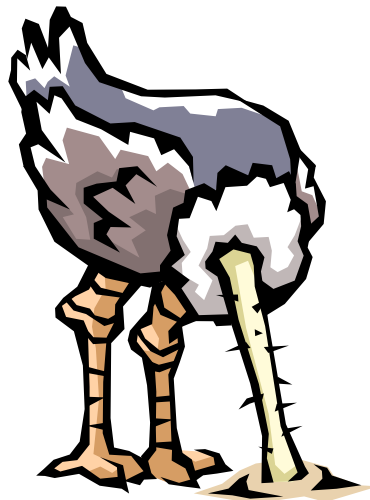
- Rebif ®
- Betaseron®
- Avonex ®
- Copaxone ®
  
- Novantrone ®
- Tysabri ®

## Disease Modifying Therapies

- Work best when started early
- Long-term adherence is needed
- Dose effect demonstrated in interferon beta 1b SC and in the EVIDENCE trial
- Similar efficacy demonstrated between High dose interferons and Copaxone
- **AAN subcommittee**
  - Reviewed evidence and gave “A” recommendations to each DMD for use in RRMS
- **NEW FDA indications:**
  - Avonex in clinically isolated syndrome
  - Betaseron in relapsing forms of MS

## NMSS Statement

- All diagnosed with relapsing MS should be on one of the approved therapies
- Should stay on therapy unless:
  - Intolerable side effects
  - Continued MS attacks and/or worsening
  - Improved agent becomes available
- Insurers should cover all approved therapies



## What can these therapies do?

- All current therapies can reduce
  - Inflammation
  - Delay the accumulation of disability
- All current therapies reduce the formation of new lesions in the brain and spinal cord

## What are these therapies unable to do?

- Current therapies CANNOT:
  - Cure MS
  - Alleviate current symptoms
  - *Stop* disability
  - Repair existing damage in the brain and spinal cord
  - Regenerate new myelin and new nerve fibers

## Interferon beta's

- Anti-inflammatory
  - Less activation of inflammatory immune cells
  - Block immune cells from entering the central nervous system

## Interferon beta-1b

- Betaseron®
  - Reduced relapse rate by about 30 %
  - Reduced serious relapses by 50%
  - Fewer new lesions
  - Fewer inflammatory lesions
  
  - Betaseron® is indicated for the treatment of relapsing forms of multiple sclerosis to reduce the frequency of clinical exacerbations.
  
  - Less effective in SPMS
  - Every other day subcutaneous injection

## Interferon beta-1a

- Avonex®
  - Reduced relapses by 18%
    - Intent to treat analysis
    - In those who completed 2 years: 32 %
  - Delayed progression of disability
  - Positive effect on MRI
  
  - AVONEX® is indicated for the treatment of patients with relapsing forms of multiple sclerosis to slow the accumulation of physical disability and decrease the frequency of clinical exacerbations.
  
  - Not effective in SPMS
  - Weekly intramuscular injections

## Interferon beta-1a

- Rebif®
  - Reduced relapses by 32%
  - Positive MRI effect
    - Fewer new lesions
    - Less inflammatory lesions
- Rebif® is indicated for the treatment of patients with relapsing forms of multiple sclerosis to decrease the frequency of clinical exacerbations and delay the accumulation of physical disability
- Not as effective in SPMS
- Three times/week subcutaneous injections

## Glatiramer Acetate

- Copaxone®
  - Induces suppressor T-cells
  - Structurally similar to myelin basic protein
  - Reduced relapses by 29%
  - Reduced inflammation in the CNS as seen on MRI
  
- Copaxone® is indicated for reduction of the frequency of relapses in patients with RRMS
  
- ⊕ Not effective in PPMS, not tested in SPMS
- ⊕ Daily subcutaneous injection

## Natalizumab

- Tysabri®
  - Prevents activated immune cells from entering the central nervous system
  - Reduced relapses by about 67%
  - Reduced CNS inflammation seen on MRI
- Tysabri is approved as a monotherapy for the treatment of patients with relapsing forms of multiple sclerosis to delay the accumulation of physical disability and reduce the frequency of clinical exacerbations. TYSABRI is generally recommended for patients who have had an inadequate response to, or are unable to tolerate, alternate MS therapies
- IV infusion once/month
- Potentially a higher risk: PML

## Mitoxantrone

- Novantrone®
  - Reduced relapses
  - Delayed progression
  - Fewer new MRI lesions
  - Less inflammation on MRI
- Novantrone is indicated for worsening relapsing MS and secondary progressive MS
- IV infusions every 3 months
- Maximum lifetime cumulative dose reached in about 2 yrs. (140 mg/m<sup>2</sup>)

## Side effects of DMT's


## Good, Better, Best??????



- ALL DMT's are effective!
  - Reduction of relapses
  - Some effect on progression of disability
  - Positive effect on MRI
- How does one choose?

## Decision Process

- Diagnosis of MS is made
- Treatment is discussed
- Recommendation is made
- Information about treatment is provided
- Discussion about effects and side effects
- Insurance verification
- Training



## How do you know if the DMT is working???



- Close follow-up with your MS provider
  - Evaluate:
    - Clinical relapses before and after initiation of treatment
    - Severity of relapses
    - Changes on MRI
    - Progression of any disability
    - DMT tolerability

## What to do if the treatment is not working??

- Be sure treatment is taken as prescribed
- Change to different class of medication
  - Interferon to Copaxone or the reverse
  - Interferon or Copaxone® to Tysabri®
  - Any of the above to Novantrone®

## Knowledge = Realistic Expectations



- What you need to know:
  - About MS,
  - Treatments
  - Expectations of therapy,
  - Side effects,
  - Side effect management,
  - Where to get help

## Supportive Care Programs

	MS Pathways	MS ActiveSource	Shared Solutions	MS Lifelines
<b>Provides:</b>	Access to nurse hotline	Support Specialists provide Information and literature	Confidential nurse counseling	Support from Nurse Support Specialists
<b>Availability:</b>	24 hours 7 days a week	Monday – Friday 8:30 AM – 8:00 PM	Monday – Friday 7:00 AM – 10:00 PM CST	Monday – Friday 8:00 AM – 8:00 PM EST
<b>Phone Number:</b>	800-788-1467	800-456-2255	800-887-8100	877-447-3243
<b>Sponsored by:</b>	Berlex (Betaseron)	Biogen (Avonex) (Tysabri)	Teva (Copaxone)	Serono (Rebif) (Novantrone)

## Conclusions

- All DMT's are effective in RRMS
  - Reduction in frequency of relapses
  - Potential for reduction in progression
  - Sense of Control
  - Improved sense of well-being
- Education = Realistic Expectations
- The key to successful treatment
  - Initiating and adhering to DMT
  - Requires good communication and a circle of support: patient, family, MD, RN, and community resources all working together