Nursing Case Studies in Multiple Sclerosis

Focus on Disease Trajectory

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Multiple Sclerosis

• MS is an immune-mediated, degenerative disease, precipitated by unknown environmental factors in genetically susceptible individuals

• MS is a clinical diagnosis based on history and neuro exam and supporting laboratory data to establish:
  – Dissemination in space
  – Dissemination in time
  – No alternative neurologic disease
Nursing Principles of Management

• Recognize or assess MS symptoms
• Intervene to manage symptoms to:
  ▪ Maintain functional independence
  ▪ Improve and facilitate an acceptable quality of life
  ▪ Promote Hope

A wellness philosophy is the focal point of comprehensive care

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Nurse Role

• Encourage positive initial expectations
• Build adherence to treatments
• Establish realistic expectations
• Get to know family or significant supporters
• Continue ongoing education
• Build self-confidence
• Support and encourage

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MS is Unique

- 75% with MS are women
- Progressive/dynamic disease
- Hallmark - exacerbation and remission
- Some symptoms unique to MS
- Lesions appear in CNS
- Oligoclonal bands in spinal fluid
- Treatments available to limit exacerbations and remissions
### MS Disease Characteristics

#### Figure 1. Types of MS

<table>
<thead>
<tr>
<th>Type</th>
<th>Graph 1</th>
<th>Graph 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relapsing-remitting</td>
<td><img src="image1.png" alt="Graph" /></td>
<td><img src="image2.png" alt="Graph" /></td>
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<tr>
<td>Primary-progressive</td>
<td><img src="image3.png" alt="Graph" /></td>
<td><img src="image4.png" alt="Graph" /></td>
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<tr>
<td>Secondary-progressive</td>
<td><img src="image5.png" alt="Graph" /></td>
<td><img src="image6.png" alt="Graph" /></td>
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<tr>
<td>Progressive-relapsing</td>
<td><img src="image7.png" alt="Graph" /></td>
<td><img src="image8.png" alt="Graph" /></td>
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</table>
Symptom Overview

- Generally motor, sensory, emotional, cognitive
- May stabilize, fluctuate, or progress
- New onset may indicate relapse or pseudo-relapse

Symptoms are:
- Primary (eg. fatigue, tremor)
- Secondary (eg. falls, UTIs)
- Tertiary (eg. Loss of job, divorce)
Common MS Symptoms

- Fatigue
- Depression (mood disorders)
- Cognitive changes
- Motor deficits (spasticity, weakness, ataxia)
- Sensory/pain disorders
- Bladder and bowel changes
- Sexual dysfunction
Less Common MS Symptoms

- Tremor/incoordination/ataxia
- Speech disturbance: dysarthria, scanning speech
- Dysphagia
- Lhermitte’s phenomenon
- Vertigo
- Visual changes: diplopia, unilateral vision loss
- Seizures
Multiple Sclerosis ROS

- Cognitive slowing
- Depression
- Anxiety
- Emotional lability
- Fatigue
- Heat sensitivity
- Ataxia
- Weakness
- L’Hermitte’s Phenomenon
- Spasticity
- Pain/Dysesthesias
- Trigeminal Neuralgia
- Tonic spasms
- Seizures
- Diplopia
- Swallowing Difficulties
- Vertigo
- Bladder Problems
- Bowel Problems
- Sexual Problems
MS Functional Composite (MSFC)

- 25 foot walk
- 9-hole peg test
- PASAT

Table. Demographic data on the medical students and average of correct results in the PASAT testing.

<table>
<thead>
<tr>
<th>Variable</th>
<th>PASAT 3 seconds</th>
<th>PASAT 2 seconds</th>
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<tbody>
<tr>
<td>Gender</td>
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<td>Male</td>
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<td>Female</td>
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<td>Age group (years)</td>
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<td>20-25</td>
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<td>30.5</td>
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<td>31-35</td>
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<td>Asian</td>
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</tbody>
</table>

PASAT: paced auditory serial addition test.
Disease Progression

EDSS = Expanded Disability Status Scale.
Adapted with permission from JS Wolinsky. Kurtzke JF. Neurology. 1983;33:1444-1452.
Goals of MS Disease Management

• Treat/manage relapses
• Prevent the development of additional MRI lesions
• Modify the course of disease
  – Relapses, disability
• Manage symptoms
• Optimize QOL
Case: Daisy
Newly Diagnosed
(27 yo RH AA F student c RRMS)

• Symptoms
  – 2006: blurred & double vision while serving National Guard (symptoms resolved)
  – 2012: Numbness in both legs

• Diagnosis: RRMS (2 episodes of neurological symptoms referable to the CNS, separated in space and in time)
  – 2013: Double vision; urinary urgency; poor attention and memory past 6 months; fatigue; heat intolerance; problems with balance

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Prevalence by Cognitive Domains

Domains

- Memory 40%
- Information Processing 35%
- Attention/concentration 30%
- Problem Solving 20%
- Visuospatial Abilities 20%
- Verbal fluency 10%

One domain: 50%    Multiple domains: 22%
Supporting the Diagnosis

• Findings on exam:
  – left INO
  – vertical nystagmus, right ptosis,
  – mild LE ataxia with tandem gait

• MRI Brain and T spine
  – Multiple enhancing white matter lesions
  – High T2 signal in the right optic nerve
  – Rim enhancing lesion at T6-7

• CSF
  – Bands notes in CSF and not in serum
Measure of Brain Volume Loss: Brain Atrophy

- Healthy control: BPF 0.89
- RRMS: BPF 0.84
- RRMS: BPF 0.80
- SPMS: BPF 0.70

Slide courtesy of Anthony Traboulsee, MD
Social History

- Homeless
- Unemployed
- Single
- Nonsmoker; no ETOH; no illicit drugs
- On line college student - struggles to understand material
- Unwanted pregnancy (8 weeks)
Medications

- IM Interferon beta- 1a
- Gabapentin 300mg tid
- Oxybutynin Chloride 5mg tid
- Prenatal multivitamin
Nursing Process
Plan for Hope, Independence, QOL

Assessment

Plan

• Identify short and long-term goals?
• What issues impact QOL?
• What do you think is the greatest barrier to a wellness plan?
• How does nursing support hope in this veteran with MS?

Theory

• Maslow’s Hierarchy of Needs
• Roy’s Adaptation Model

Intervention

• Involve multidisciplinary team
• Support adherence to tx
• Support realistic expectations

Evaluation

Veteran will demonstrate…….as evidenced by…. within three months

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Six Months From Diagnosis

- Pregnancy ended in miscarriage
- Found employment through VA CWT program
- Shelter - application for HUD voucher
- Made application for VA service connection entitlements
- Symptoms somewhat worse for thinking, balance (recent fall) and vision
- New onset pain
- Unable to complete course work
Larry-Progressive MS

• 63 yo SPMS, retired lawyer
• Social: former smoker; no ETOH; divorced; living in LTC; supportive siblings; estranged wife and grown children
• Initial Sx: poor balance while in Army 1974
• Dx: 1992 SPMS
• PMH: DM; HTN; DVT X2
• ITB: 1997
• DMT: Copaxone
• EDSS 9.0  (Helpless bed patient: can communicate and eat)

• What the EDSS doesn’t tell us: secondary sx.
Symptoms

• Dysphagia
• Neurogenic bladder requiring foley catheter with frequent *urinary tract infections*
• Neurogenic bowel: colostomy
• Spasms and arm *contractures*
• Pain
• Wounds
• Depression
• Asking to die
Medications

• Intrathecal baclofen
• Botulinum toxin to upper extremities q 3-4 months
• Methenamine hippurate 1gm bid
• Percocet PRN
• Ascorbic acid 1000mg bid
• Ciprofloxacin 500mg bid 7 days
• Thickit 2tbs to liquids
• Boost 1can bid
• Copaxone 20mg qdaily
• Wound vac
Exam

- Bed bound
- Imaging: barium swallow indicating risk for aspiration; recommend pureed diet with honey thickened liquids
- Stage III wound lt. heel; stage IV sacrum
- GU: 22 G foley draining cloudy yellow urine; hyperspladia
- Abnormal labs: albumen 2.4 g/dl, WBC 14.3K/Cmm; C&S >100,000 proteus; Klebsiella; MRSA
Nursing Process
Plan for Hope, Independence, QOL

Assessments/Plan

• How would the nurse address QOL for Larry?
• What is Larry’s right to autonomy and self-determination?
• What physical symptoms may influence Larry’s decision making capacity?
• What are Larry’s strengths?
• Does copaxone have a purpose?

Intervention

• Involve multidisciplinary team
  – Wound care nurse
  – ID
  – Palliative Care
  – Psychiatry
• Frequent ROM and positioning
• Comfort/pain relief
• Wound care
• Address nutrition
• PEG?...ileostomy?
• Involve family
Nursing Process

• Theory
  – Bioethical theories of autonomy (self-determination); beneficence; nonmaleficence; fidelity; and, justice

• Evaluation
  – The veteran will remain comfortable as evidenced by increased sleep, improved mood, resolving wounds, improved nutrition within one week to three months

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Three Months Later

• Accepted PEG feeding
• Stabilized and discharged home April 3
• Elderly mother and LPN direct care giver
• Pneumonia; transferred to community hospital April 23
• Discharged to LTC May 1
• June 13: vomiting, aspiration pneumonia (IV ABX, thoracentesis & transfusion)-resolved and discharged to LTC
• Readmit June 22: SOB and suspected aspiration
• DNR and palliative care
• July 3: Larry dies
Thank you

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Resources

• Paralyzed Veterans of America
  – www.pva.org

• National MS Society
  – www.nmss.org

• Consortium of MS Centers
  – www.mscare.org

• Multiple Sclerosis Association of America
  – www.msaa.com

• VA MS Centers of Excellence (East & West)
  – www.va.gov/ms