Concerns for Special Patient Populations With MS

Overview

- MS and gender
- Studies suggest gender affects susceptibility and course of MS
- Women: higher prevalence and better overall prognosis than men
  - Possibly due to effect of sex hormones on neurological damage and repair mechanisms, cytokines, BBB, and CNS parenchymal cells
- Gender-specific effects of hormones in MS pathology and therapy response
- MS and age
- Children
- Elderly

BBB=blood-brain barrier; CNS=central nervous system

Tomassini V, Pozzilli C. *Expert Opin Pharmacother.* 2006;7(7):857-868.
Nicot A. *Front Biosci*. 2009;14:4477-4515.

MS in Women: Menses and Menopause

Studies show:

- **Estrogens may play an important role in protecting the CNS against inflammation**
- **Anti-inflammatory action of estrogens occur directly on microglia**
- **Potential therapeutic use of hormones?**
- **Premenstrual relapses can occur**

Zorgdrager A, De Keyser J. *Eur Neurol.* 2002;48(4):204-206.
Vegeto E, et al. *Front Neuroedocrinol*. 2008;29(4):507-519.

MS in Women: Pregnancy

Studies show:

- **MS does not affect ability to conceive**
- **MS does not increase risk of congenital malformations in babies**
- **Small for gestational age more common**
- **Deliveries more complicated**
- **C sections more likely**
- **Preterm delivery more common**
- **Symptoms may worsen in pregnancy (eg, mobility, gait, fatigue, urinary symptoms)**
- **Relapses may decrease in pregnancy but increase postpartum**
- **Pregnancy does not seem to affect the course of MS**
- **MS may improve in late pregnancy**

NMSS. Reproductive issues in person with multiple sclerosis. Clinical Bulletin, Information for health professionals: www.nationalmssociety.org/pdf/forpros/Pregnancy.pdf; September 21, 2006.
Ferrero S, et al. *Eur J Obstet Gynecol Reprod Biol.* 2004;115(1):3-9.
Chen Y, Lin H. *Mult Scler.* 2009.
Sandberg-Wollheim M, et al. *Neurology.* 2005;65(6):802-806.

MS in Pregnancy, continued

- **Treatment of MS during pregnancy and post-partum**
  - **Interferon beta-1a therapy associated with miscarriages, stillbirth, and malformations**
  - **None of the disease-modifying therapies (DMTs) are recommended in pregnancy**
  - **Glatiramer acetate has a category B rating in pregnancy**
  - **Patients usually stop DMTs 1-2 months prior to trying to conceive**
  - **Relapses during pregnancy can be treated with steroids after first trimester**
  - **Post-partum relapse can be treated by intravenous immunoglobulin (IVIG) therapy and steroids**

Ferrero S, et al. *Eur J Obstet Gynecol Reprod Biol.* 2004;115(1):3-9.
Sandberg-Wollheim M, et al. *Neurology.* 2005;65(6):802-806.
Sellebjerg F, et al. *Eur J Neurol.* 2005;12(12):939-946.

MS in Children: Overview

- 3.5%-5% of 2.5M patients are diagnosed before age 18
- Onset as young as 10 months
- Many adults with MS report symptoms in childhood
- Children are likely under diagnosed
- Diagnostic criteria: presence of recurrent neurologic dysfunction involving separate areas of the nervous system and relapses, each lasting at least 24 hours
- Hospital for sick children

Brenda Banwell, MD and Jennifer Boyd, RN, MSCN

MS in Children

RRMS in childhood

- **Disease progression may be slower in children**
- **50% with onset before age 16 and switch to SPMS after 23 years**
- **2.6%-5% PPMS**

Considerations...

- **Developing brain and spinal cord**
- **Immature immune system**
- **Different concerns (school performance, peer relationships, recreation, play)**
- **Education and support needs differ**
- **Issues of substitute decision making**

Boiko A, et al. *Neurology*. 2002;59(7):1006-1010.

MS in Children

Presenting symptoms

- **Similar to adults**
- **Children are more likely to be systemically unwell at onset of disease and exhibit symptoms of encephalopathy (malaise, irritability, low grade fever)**

Common presenting symptoms

- **Hemiplegia**
- **Optic neuritis**
- **Brain stem/cerebellar signs**

MS in Children

Symptoms

- **Cognitive deficits**
- **Heat intolerance**
- **Fatigue**
- **Depression**
- **Tremors**
- **Headache**
- **Seizures**

MS in Children

Treatment challenges

- **Parents make treatment decisions**
- **Young children don’t have the capability to understand the rationale for injections and long-term benefits**
- **Adolescents do not always accept the need for therapy**

Treatment challenges

- **Long-term steroid use causes growth retardation**
- **No studies with DMT in children**
- **DMTs are not FDA approved for pediatric use**
- **No clinical trials in pediatrics (efficacy, dosing)**

Disease-Modifying Therapies

- Dosing: start at ¼-½ of the dose and gradually increase to full dose as tolerated
- Consider staying at ½ of the dose for children <7 years old
- Maximize dose while minimizing side effects—monitor CBC, liver function tests closely
- Make the first injection a positive experience
- Involve the whole family in teaching
- Encourage the participation of the child as much as possible
- Use a teaching doll

Initiating Disease-Modifying Therapies

- Offer choices (manual vs auto-injector)
- Ask the child what would help with coping (eg, sitting on a parent’s lap, holding a favorite toy, etc.)
- Consider using a topical anesthetic cream
- Have the parent observe the nurse administering the first injection

Resources for Families

- National MS Society. Children/teens with MS and their parents' support network website
  - National Multiple Sclerosis Society. Keep S'myelin: http://www.nationalmssociety.org/multimedia-library/kids-keep-smyelin/index.aspx; April 10, 2009.
- MS World, Inc. Message boards for parent, teens, and children to post messages and share experiences
  - (MS World. http://www.msworld.org/html/. Accessed April 10, 2009.)

Special Populations With MS: Elderly

- MS typically diagnosed in the 20-40 age range. It is a chronic debilitating disease but does not typically reduce life expectancy
- Specific issues related to aging with MS: fear of the future related to
  - Loss of mobility
  - Loss of independence
  - Becoming a burden on family
  - Having to move to a nursing home
  - Losing control over future

Finalyson M. *Am J Occup Ther*. 2004;58(1):54-63.

Elderly

- Other neurological and non-neurological diseases affecting elderly patients with MS
  - Parkinson's
  - Stroke
  - Heart disease
  - Breast cancer
  - Diabetes
  - Urinary tract infections (UTIs)
  - Depression
  - Osteoporosis
  - Poor nutrition
  - Injury due to falls/driving

Clinical Case: Dorothy

- A 64-year-old woman recently was in an automobile accident that resulted in a fracture of her left hip. She was hospitalized for surgery and monitoring.
- She complained of a headache, and an MRI revealed periventricular lesions in her brain.
- Neurologic examination was positive for sensory loss in both lower extremities, a wide-based ataxic gait, and dystaxia of all extremities.
- Lumbar puncture was positive for oligoclonal banding.
- She was informed she has multiple sclerosis.
- Her medical history was positive for frequent UTIs, osteopenia, and short-term memory loss.
- After inpatient rehabilitation, she comes to your office requesting MS treatment.

What treatments would be appropriate for this patient?

a. Rehabilitation services
b. Observation
c. Corticosteroids
d. Neurologic monitoring

What are the patient's risks at this time?

a. Falls
b. Managing her affairs
c. Infections
d. None at this time

Clinical Case: Steven

- A 14-year-old male recently diagnosed with multiple sclerosis.
- He is at your office very upset, is refusing to take his injectable medication, and wants “out” of the health care system.
- His friends are making fun of him. He hates being different.

What can you do to help?

a. **Suggest counseling for him and his family**
b. **Send him to a support group**
c. **Insist he take his medication to control his MS**
d. **Involve his parents**

What treatments are not indicated for pediatric MS?

a. DMTs
b. Corticosteroids
c. Pain medications
d. Chemotherapy

Clinical Case: Sally

- A 24-year-old woman with a history of MS for 3 years.
- She is 6-months pregnant.
- She presents at your office with vision loss in her left eye. V/A is 20/200.
- No other hard findings on examination.

What should be done first?

a. Ophthalmology consult
b. Call her OB/GYN
c. Obtain an MRI
d. All of the above

Corticosteroids are not indicated when a patient is pregnant.

a. True
b. False