SEXUAL DYSFUNCTION OCCURS AS A RESULT OF MS-RELATED CHANGES IN THE CENTRAL NERVOUS SYSTEM THAT DIRECTLY IMPAIR SEXUAL FEELINGS OR SEXUAL RESPONSE. ONE EXAMPLE IS DECREASED OR ABSENT LIBIDO, WHICH IS ALSO ONE OF THE MOST COMMON COMPLAINTS RELATING TO SEXUAL DYSFUNCTION AMONG WOMEN IN THE GENERAL US POPULATION BUT HAS A MUCH HIGHER PREVALENCE IN WOMEN WITH MS.

ALTERED GENITAL SENSATION, INCLUDING NUMBNESS, PAIN DURING INTERCOURSE, AND HYPERSENSITIVITY ARE ALSO REPORTED BY WOMEN WITH MS, AS IS DECREASED VAGINAL LUBRICATION, CLITORAL ENGORGEMENT, AND DECREASED VAGINAL MUSCLE TONE. IN MOST STUDIES INVOLVING MEN, THE PRIMARY COMPLAINT IS ERECTILE DYSFUNCTION. DECREASED FREQUENCY AND INTENSITY OF ORGASM HAVE BEEN REPORTED BY BOTH MEN AND WOMEN WITH THE DISEASE.

SECONDARY SEXUAL DYSFUNCTION

SECONDARY SEXUAL DYSFUNCTION INVOLVES MS-RELATED PHYSICAL CHANGES OR MEDICAL OR PHARMACOLOGIC TREATMENTS THAT INDIRECTLY AFFECT SEXUAL
feelings or sexual response. Examples include bladder or bowel dysfunction, which are highly correlated to sexual dysfunction due to nerve pathways that are shared or proximal to those mediating sexual functioning. Bladder and bowel problems also are associated with psychologic distress to a high degree. “As soon as they begin to worry about having a bladder or bowel accident in bed, most people’s focus on and interest in sex begins to disappear quite rapidly,” said Dr. Foley.

Nongenital sensory paresthesias—changes in sensation throughout the body—can also interfere with sexual functioning, as can spasticity, decreased nongenital muscle tone, cognitive impairment, tremor, and pain.

“Who would think that impaired concentration would impair sexual functioning? We have seen many cases where it does,” he remarked. “Someone may have a working memory problem and otherwise be relatively intact neuro-psychologically, but the impairment in sustained attention or working memory seems to interfere with maintaining focus throughout the sexual experience,” explained Dr. Foley.

Another secondary symptom that may interfere with sexual functioning is MS-related fatigue. Part of the problem is that many times partners don’t quite understand the qualitative difference between this type of fatigue and normal tiredness, he said.

**Table 1**

**INTERVIEW TECHNIQUES FOR CLINICIANS**

- Increase your comfort level with sexual questions by asking them more often
- Put sexual questions in a clear context, such as possible sexual side effects when prescribing new medicine, changing dose, and taking medication history
- Integrate sexual questions into review of systems during initial evaluation
- Interview prior to physical examination during first visit
- If checklists are used for patient review of systems, add section on sexual function/health between urologic and gynecologic questions
- Have patient fill out a more detailed questionnaire such as the MSISQ-19

**TERTIARY SEXUAL DYSFUNCTION**

Tertiary sexual dysfunction refers to the psychologic, social, and cultural issues that can interfere with sexual feelings or response. It includes changes in attitudes involving self-image or body image. “Many patients have told me they feel like less of a man or less of a woman because of MS-induced changes,” noted Dr. Foley.

Women are particularly vulnerable to having a negative body image. “Many women with MS whom I treat tend to focus on parts of their bodies that they don’t like,” he said. For men with MS who are no longer able to work or be what our culture regards as “useful,” MS can induce tremendous anxiety and loss of self-esteem.

Sometimes conflicts about caregiving activities performed by a spouse or partner can lead to feelings of resentment. How does one shift away from being a caregiver to being a lover? “We help couples manage those shifts,” said Dr. Foley.

Tertiary difficulties are compounded profoundly for gay men and lesbians with MS. Many are less willing to talk to their health care providers about their sexuality because they are afraid that they will be stigmatized or judged. Although there are no easy answers to this problem, it is important that clinicians be more aware of and sensitive to these issues, he added.
Another aspect of tertiary dysfunction is clinical depression. “Because the lifetime risk for significant clinical depression in people with MS is about 50%, we need to assess patients’ psychiatric status,” stressed Dr. Foley. Are they depressed? Are they anxious? Are they demoralized? “Treatment of these emotional issues frequently restores sexual functioning,” he added.

Table 2

HOW TO TALK ABOUT SEX: ADVICE FOR PATIENTS AND THEIR PARTNERS

- Agree on when and where it’s most comfortable to talk about sex
- Do not accuse, criticize, or blame partner. If something must be blamed, Dr. Foley suggests blaming the MS, not each other
- Be aware that sexual feelings and preferences change, especially as MS symptoms fluctuate
- Use nonverbal communication assertively, ie, take his or her hand and demonstrate desired type/area of touching
- Do not expect perfection
- Do your best to maintain a sense of humor throughout

Let’s Talk About Sex—Maybe

The topic of sexuality “makes many health care professionals uncomfortable initially,” Dr. Foley admitted. “One thing to keep in mind is that clinicians don’t have to be comfortable to initiate this discussion with their patients. It’s okay to be a little uncomfortable.”

Lack of training and lack of comfort are most predictive of whether clinicians would address this topic with their patients, according to one survey.5 “What health professionals can do is reassure patients that if they do ask for help in this area they will receive it, despite anyone’s discomfort,” he suggested.

When it comes to determining whether a patient has sexual problems, the Multiple Sclerosis Intimacy and Sexuality Questionnaire-19 (MSISQ-19)6 was found to be more sensitive than an interview, said Dr. Foley. People seem to be more willing to report sexual problems on a self-completed form rather than in an interview. (See Table 1 for additional patient interviewing techniques.) In addition, the MSISQ-19 is well validated on an MS population, takes only a few minutes to complete, and can easily be done in a clinical setting. This can help facilitate communication between the patient and the health care team.

It also is important to teach couples and individuals how to talk about sex. “At our clinic, we use books, handouts, and videos to instruct couples on how to approach each other and how to respect each other in the process,” Dr. Foley explained (Table 2).

Managing Sexual Dysfunction

“We encourage patients and their partners to talk about sexual problems and, most importantly, to work with us and with each other to find solutions,” said Dr. Foley.

MS patients typically have technical questions regarding the treatment of sexual problems related to secondary symptoms such as managing catheters (Table 3), positioning themselves to enjoy sex, and coping with fatigue and other symptoms.

If fatigue is a significant problem despite symptom management with exercise and medication, couples may need advice on rearranging their schedules to time their sexual activity when it is least fatiguing for the person with MS. “Once health care providers give couples permission to talk about this problem, couples usually begin renegotiating their schedules and frequently come up with their own solutions,” he noted.

Because most of the research on sexual function has been done in men, there are many more treatments available for men than there are for women. “We are experimenting with clinical and behavioral interventions that target libido and arousal issues in women,” said Dr. Foley.

Table 3

COPING WITH CATHETERS: SUGGESTIONS FOR PATIENTS

- Tape drainage tube to abdomen to prevent excess pulling or pressure
- Practice sexual positions that minimize catheter pulling or pressure
- Use long drainage tube and place bag out of the way
- Empty and double tape bag to prevent leakage
- Ask clinician whether bag can be disconnected during sexual activity

“Part of what we do in sex therapy is help people challenge negative assumptions about their bodies,” he explained. “We also help patients reconcile inner values and expectations with the ability to give and receive in the relationship. The goal is to be able to stand with a cane or sit in a wheelchair and feel passionate—like a lover, like a mate—not just like someone with a disability.”

—Rosalee L. Blumer

REFERENCES

HORMONAL THERAPY IN MS

Expectant mothers with multiple sclerosis (MS) often report an interesting side effect—an alleviation of disease symptoms during pregnancy.

This curious occurrence relates to two issues that implicate the role of hormones in MS: women are more susceptible than men to the disease and women with MS improve transiently during the last trimester of pregnancy, according to Rhonda Voskuhl, MD, who presented data on hormonal therapy in MS at the recent CMSC meeting in San Diego.

“During pregnancy, there is a deviation characterized by a decrease in T helper (Th1) responses and an increase in Th2 responses that is evolutionarily advantageous because it promotes fetal survival,” explained Dr. Voskuhl, Associate Professor of Neurology at the University of California, Los Angeles (UCLA) and Director of the UCLA Multiple Sclerosis Program. Th1 and Th2 cells are white blood cells that secrete cytokines—chemicals that activate cells and regulate biologic processes such as cell growth, immunity, inflammation, and tissue repair.

Estriol is the predominant estrogen produced in pregnancy. It is not present in significant amounts in nonpregnant states but increases progressively over time during pregnancy. Studies of autoimmune diseases in animal models have indicated that estriol is a strong candidate for mediating disease protection.1

In experimental autoimmune encephalomyelitis (EAE), an animal model of MS, estriol treatment was associated with an immune response consistent with that observed during pregnancy. When administered to non-pregnant female mice at replicating serum pregnancy levels, estriol was shown to ameliorate encephalomyelitis.2 In other studies, the late-pregnancy hormone estradiol when used in combination with progesterone had a minimal or negligible effect on EAE, said Dr. Voskuhl.

PILOT STUDY OF ESTRIOL IN MS PATIENTS

Dr. Voskuhl discussed the results of a recent pilot study of estriol in patients with MS.3 “All of the available anti-inflammatory therapies for MS are injections. The purpose of this trial was to test a noninjectable, oral inflammatory hormonal treatment for MS.”

Ten female patients with diagnosed MS completed the 18-month study. They were administered an 8-mg tablet of estriol once per day. Six had relapsing-remitting MS (RRMS) and four had secondary progressive MS (SPMS). The average age of participants was 44 (range: 28 to 50 years) and the mean Expanded Disability Status Scale (EDSS) score was 3.3 (range: 1.0 to 6.5). For those with SPMS, the mean EDSS baseline score was 5.0, whereas for RRMS subjects it was 2.2. The trial was extended for RRMS patients who received an additional four months of treatment with estriol and progesterone.

Compared with baseline, the total volume of lesions and number of enhancing lesions decreased during the treatment period for all 10 MS patients. Continued on page 9
Meeting Highlights

The annual meeting of the Consortium of Multiple Sclerosis Centers (CMSC) took place this year in San Diego from May 28 to June 1. The conference represented a collaborative effort by the CMSC, the International Organization of Multiple Sclerosis Nurses (IOMSN), and the Latin American Committee for Treatment and Research in Multiple Sclerosis (LACTRIMS).

“This year, the meeting was larger and busier than ever,” said June Halper, MSCN, ANP, FAAN, Executive Director of the CMSC and the Bernard W. Gimbel Multiple Sclerosis Comprehensive Care Center in Teaneck, New Jersey. There were approximately 850 attendees at the conference.

“We had more symposia, more scientific papers, and more posters than any previous year,” noted Ms. Halper. Highlights included presentations on symptom management, interdisciplinary approaches to care, cerebral spinal fluid analysis, and the use of magnetic resonance imaging (MRI) in clinical practice.

During opening ceremonies, CMSC President Frederick W. Foley, PhD announced the launch of the organizational phase of the MS Cooperative Studies Group Research Initiative—a steering committee formed to address the need for a coordinated and sustainable infrastructure for cooperative MS research.

The initiative is intended to encompass a broad spectrum of researchers, MS centers, and patients, he explained. He expressed hope and excitement regarding the initiative and its stated mission of identifying and conducting “high-quality research that will further the understanding of MS and its effects, reduce disease activity, and advance therapeutics in order to improve the quality of life of MS patients.”

LACTRIMS—CMSC’s Latin American Affiliate

LACTRIMS’ significant participation in the meeting emphasized the international flavor of the conference. A day-long Latino track offered in Spanish and Portuguese addressed issues such as epidemiology, clinical characterizations, and new avenues of research in Latin America.

“For the first time, LACTRIMS members will speak at length and contribute to various workshops,” said Victor Rivera, MD, President of LACTRIMS, during his lecture on Latin American epidemiology.

“LACTRIMS’ affiliation with the CMSC is a wonderful example of international communication and education,” he remarked. “As our association matures, we feel privileged to be part of this international effort.”

LACTRIMS was formed by neurologists from 21 countries to address the challenges posed by MS as the disease has become more prevalent in Latin American regions, said Dr. Rivera. The organization was founded during the Pan-American Congress of Neurology in Cartegena, Colombia in 1999.

Since LACTRIMS’ inception, the CMSC has played a significant role in the organization’s meetings, he noted.

The CMSC was formed in 1986. “Our impact has reached throughout the world,” said Ms. Halper. “We have collaborated with numerous organizations to meet our goals and provide the highest standard of care for people with MS.”

—Rosalee L. Blumer
Optimizing MS Patient Care: A Nursing Approach

The introduction of disease-modifying therapies (DMTs) for MS over the past decade has had a significant impact on the care of those living with the disease. Initially, the nurse’s focus was on ensuring adherence to therapy by managing drug-related adverse events. However, this is only one factor in achieving optimal outcomes in patients using DMTs. For this reason, the North American MS Nurses’ Treatment Optimization Group, which consists of 80 MS nurses from Canada and the United States, convened in October 2002. The group’s focus was to develop an evidence-based resource outlining nursing strategies to address potential problems affecting MS patients’ overall health status. The result of their extensive work is the Nursing Approach shown in the Figure on page 7.

For each step in this approach, the group developed dynamic care plans that outline assessment strategies, optimal order and timing of interventions, desired patient outcomes, and evaluation methods. They presented their findings in a poster at the recent CMSC conference in San Diego.

Step 1: Initial Assessment and Patient Selection
The process of long-term treatment optimization begins with a thorough clinical, MRI, and psychosocial assessment of the patient to ensure that he or she is an appropriate candidate for DMT and is ready to initiate treatment.

Even if the patient is not yet ready to start therapy, an individualized care plan should be developed in collaboration with the patient and family. This plan should be responsive to the changing needs and level of readiness of both the patient and loved ones. By ensuring treatment readiness prior to therapy selection, the nurse increases the likelihood of optimizing treatment at a later stage.

Interventions for treatment readiness
- Implement strategies to address physical/cognitive deficits that may impact treatment decisions and refer to appropriate health care professional
- Validate fears and modify impression that MS is “untreatable”
- Tailor and provide education on disease and treatment options according to patient’s readiness
- Ensure optimal support networks are available and mobilize patient resources

Desired patient family outcomes
- Understand the importance of therapy and personal barriers to treatment
- Express readiness to start treatment
- Incorporate plan into everyday lives and commit to the plan in the long term
- Demonstrate possible health-promoting and coping behaviors

Step 2: Treatment Selection
Because sustained treatment with DMTs in people with relapsing-remitting MS (RRMS) has been associated with several positive outcomes, Canadian and international guidelines emphasize the need to start treatment with these agents early in the disease course.

As the primary patient educator, the nurse plays a paramount role in ensuring the patient receives the most effective treatment possible based on his or her individual needs. Choosing the most effective treatment from the outset will help ensure optimal patient outcomes in the long-term.

For best results, the patient should continue treatment as long as benefit is realized and therapy is tolerated. However, the process of treatment selection is not simple because the DMTs differ in their mode of preparation, dosage level, adverse-event profile, route of administration, and proven efficacy on patient outcome measures such as relapse rate, disease progression, and MRI readings.

Interventions for optimal treatment selection
- Provide patient with reliable information regarding treatment efficacy and adverse-event profile
- Ensure patient and family participate fully in the decision-making process

Desired patient outcomes
- Makes informed decision regarding treatment
- Most effective therapy is chosen based on individual needs and resources
- Therapeutic regimen corresponds with lifestyle and cultural values
Step 3: Patient Education and Self-Injection Training

The primary goal of patient education is to empower patients to take responsibility for managing their disease.

Since DMTs are currently only available in injectable form, the introduction of these therapies requires extensive patient and family education on appropriate self-injection techniques—site selection, rotation, and injection-site management—and the management of treatment-related adverse events. Ensuring that the patient self-injects appropriately and successfully manages adverse events and injection-site reactions will help promote optimal therapeutic outcomes.

**Interventions for patient education and self-injection training**

- Educate and prepare patient for possible flu-like symptoms (for interferon-beta therapy) or immediate postinjection reactions (for glatiramer acetate) as well as other possible adverse events

**Desired patient outcomes**

- Patient reports adverse events in a timely fashion and manages them appropriately
- Patient times administration of medication in order to minimize adverse events
- Systemic adverse events are minimized

Step 4: Long-Term Assessment and Monitoring

Central to the Nursing Approach is the regular and long-term clinical, MRI, and laboratory assessment of the patient (including the assessment of physical and cognitive functioning), the evaluation of psychosocial functioning, and the monitoring of adherence to therapy. It should be emphasized that these assessments are interrelated (as depicted in the Figure). Poor outcomes on one of these parameters may have an effect on the others. Suboptimal clinical, MRI, psychosocial, or adherence outcomes may require re-education, additional assessments, interventions designed to optimize functioning and, in some cases, a reconsideration of treatment choice.

The primary goal in this step of the Nursing Approach is to ensure that the patient follows an effective treatment regimen so the best possible physical, psychosocial, and quality-of-life outcomes are achieved.

**Interventions for suboptimal adherence**

- Inform neurologist if nonadherence is due to suboptimal treatment response and collaborate with neurologist and patient to determine if switching therapy is necessary
- Ensure patient maintains realistic expectations for treatment
- Assist patient in obtaining funding for therapy

**Desired patient outcomes**

- Patient adheres to treatment regimen
- Patient feels sense of control over MS
- Patient and family experience an improvement in quality of life
- Decrease in the number of complications associated with the disease

The North American MS Nurses’ Treatment Optimization Group developed an evidence-based nursing approach to address the many factors involved in obtaining optimal patient outcomes.
Developing Patient Education Materials: The Experience at the Calgary MS Clinic

It is vital for clinicians to stay aware of the changing needs of the MS population and to continue to meet these needs in order to provide quality health care. Distributing printed materials is one important way of providing up-to-date medical information to MS patients in a clinical care setting.

In a poster presentation at the recent CMSC annual meeting in San Diego, Sharon Peters, RN, BN stressed that while developing effective educational tools is a “challenging and lengthy process, printed teaching materials are valuable resources for MS patients and health care workers.” To ensure that the materials developed are current, accurate, and readable, it is necessary to have a regular review of these materials by patients and staff, she added.

With this goal in mind, in 2002, Ms. Peters and colleagues at the University of Calgary MS Clinic, which serves more than 3,500 MS patients, identified a need to review existing patient materials for content and quality. Specifically, they sought to determine which pamphlets should be revised and to identify topics for which new materials should be developed. Ms. Peters shared the clinic’s experience with other health care workers at the conference.

The first step in the process was to identify new topics that required educational materials as well as materials already in existence that warranted revisions. This was determined through discussions with the clinical staff and interviews with patients at the clinic.

“Educational materials currently in circulation were assessed within the MS Clinic, the Calgary Health Region (CHR), and the MS society,” she said. Through these assessments, it was determined whether each handout effectively met the needs of the clinic.

For example, after a review of existing materials, the team identified a need for the development of new educational handouts on mitoxantrone and steroids in the treatment of MS. Another goal was to revise existing educational handouts on osteoporosis, fatigue, and spasticity.

Next, an educational resources specialist provided assistance with the planning, evaluation, and printing of the new and revised materials. The CHR protocol for development and approval of the teaching materials was determined and implemented.

To develop the materials, content information was gathered through a literature search, consultation with peers, and the Canadian MS Nursing Care Plan. Special consideration was given to literacy and readability issues as well as to the legibility of the printing and whether patients would be likely to find the materials useful.

Draft pamphlets were prepared and circulated to clinic staff, physical therapists, the rehabilitation team, and the CHR Educational Specialist for review. The materials were revised based on feedback received from all sources and were then resubmitted to the review team for further evaluation. This process was repeated until all outstanding issues were satisfactorily addressed. Ms. Peters emphasized that evaluation of these materials should be ongoing.

Examples of comments from patients included statements such as, “I would like to see more information on other things to treat spasticity besides medications” and “I wish I had this information before I started taking this drug,” stated Ms. Peters. She noted that patients would also indicate on the pamphlets any information that they didn’t understand.

Staff feedback included questions on whether patients would understand medical terminology (such as the abbreviation IV), questions on the available formulations of certain medications, and comments on the writing style of the educational materials.

—Krista Binetti

IOMSN Update

INTERESTED IN SHARING YOUR KNOWLEDGE WITH THE WORLD? JOIN THE IOMSN!

The IOMSN is the only organization dedicated to the education of MS nurses around the world. If you wish to join the IOMSN, you can access it on the World Wide Web at www.iomsn.org, or contact the organization at:

IOMSN
c/o Bernard W. Gimbel MS Comprehensive Care Center
718 Teaneck Rd • Teaneck, NJ 07666 • (201) 837-0727
However, improvements in the group as a whole were due to beneficial effects of estriol in those with RRMS, not SPMS, said Dr. Voskuhl.

Within the first three months of treatment, total volume of enhancing lesions in the RRMS group decreased by 79% and total lesion number decreased by 82%. In the first three months off treatment, total enhancing lesion volumes and number of lesions became variable in RRMS subjects, then returned to near-baseline levels in the last three months of the posttreatment period. During the four-month retreatment extension phase, enhancing lesion volumes decreased again by 88% in this group, as did the number of lesions, this time by 48% compared with baseline (Figure).

Participants experienced few relapses during the trial. Results of the EDSS and the nine-hole peg test—which measures fine motor coordination—showed no significant changes during the study. Scores on the Paced Auditory Serial Addition Task, a measure of complex attention and concentration, were significantly improved in the RRMS group but not in the SPMS group.

Response to estriol treatment was statistically significant in the RRMS patients but not in those with SPMS. This is consistent with the response to other MS therapies with potent anti-inflammatory effects but also could be related to small sample sizes, Dr. Voskuhl noted (Table).

“This is the first time to our knowledge that a pregnancy hormone has been given at a pregnancy-level dose to nonpregnant women with autoimmune disease and resulted in an improvement in an inflammatory marker of disease activity,” she remarked.

Dr. Voskuhl reported that serum estriol levels during treatment and retreatment were similar to those occurring in women who were six months pregnant but were lower than those in women 8.5 months pregnant. Estriol was well tolerated, although all participants experienced minor menstrual cycle abnormalities. Endometrial biopsy was performed in three of the women due to menstrual bleeding irregularities but all tested negative for hyperplasia. There was no breast cancer detected by mammography at the end of the study and no laboratory abnormalities were detected. There was enlargement of known uterine fibroids in one patient.

Dr. Voskuhl noted that a double-blind, placebo-controlled study of estriol in RRMS patients is planned to confirm the pilot trial’s results.

“Although this is a small trial in a limited number of RRMS patients, it is noteworthy that the degree of improvement in enhancing lesions was within the realm of what has been observed previously for the four approved MS treatments in larger trials,” Dr. Voskuhl added. If larger studies confirm a beneficial effect of estriol treatment on MRI findings, longer-term studies will be needed to determine the efficacy and safety of this therapy.

“If estriol is administered for longer periods of time, it should be given in combination with progesterone to protect against endometrial hyperplasia,” she suggested. “Data from our patients who reinstituted treatment with estriol and progesterone demonstrated no evidence that progesterone antagonized the beneficial effect of estriol, at least in the short term,” she said.

Further study of oral estriol treatment in RRMS is warranted, either as monotherapy or in combination with other established therapies that rely on immune deviation, such as glatiramer acetate (Copaxone®) or T-cell receptor vaccination (a vaccine currently in clinical trials designed to specifically kill disease-inducing T cells). In addition to significantly decreased T₃1 responses, she suggested that other actions of estriol might be possible, including other immune mechanisms, more direct action on the blood-brain barrier, or effects on neurons.

Since the study was published, Dr. Voskuhl reported that additional research with the six RRMS patients showed a decrease in tumor necrosis factor-alpha (TNF-alpha) and an increase in interleukin-5 (IL-5) and interleukin-10 (IL-10) with estriol treatment. TNF-alpha is a cytokine secreted by T₃1 cells, while T₃2 cells secrete IL-5 and IL-10.

—Rosalee L. Blumer

References
PREVENTING OSTEOPOROSIS IN MS

Osteoporosis and fractures are extremely common in the MS population, particularly in women who are postmenopausal and not receiving hormone replacement therapy. Individuals with MS are at increased risk for osteoporosis because of decreased mobility and steroid use. They also have a greater risk of falling and breaking bones.

“Inquiries based on risk factors alone will miss 70% of women with bone loss,” stated Christianne Bishop, MD, Physical Medicine and Rehabilitation Specialist at the University of Washington Medical Center in Seattle, during a poster presentation at the recent CMSC meeting in San Diego. She said that performing bone density scans using dual energy x-ray absorptiometry provides the most accurate way of determining bone loss.

Clinical manifestations of osteoporosis include acute fractures, low back or pelvic pain, and posture changes. Bone becomes more porous through loss of normal bone spicules and cross-links that provide structure and strength, she explained.

BIOLGY OF BONE REMODELING

As noted by Dr. Bishop, bone remodeling has five phases: 1) activation; 2) resorption (bone loss due to the activity of cells called osteoclasts); 3) reversal; 4) formation requiring osteoblasts (bone-forming cells); and 5) quiescence, or a quieting down of activity.

Remodeling—whereby old bone is removed by osteoclasts and new bone is laid down by osteoblasts—is increased by parathyroid hormone, thyroxine, growth hormone, and vitamin D, and is decreased by calcitonin and estrogen. Calcitonin is a hormone produced by the thyroid gland that inhibits bone removal by osteoclasts and promotes bone formation by osteoblasts. Estrogen helps the absorption of dietary calcium and magnesium and inhibits osteoclasts, blocking bone breakdown, Dr. Bishop stated.

She explained that progesterone has a modest effect on osteoblasts because it stimulates new bone growth. However, progesterone can act only if adequate estrogen is present. “Testosterone is an osteoblast stimulator and has greater bone-building effect than progesterone by stimulating new bone growth and enhancing bone strength,” she said.

MANAGEMENT OF OSTEOPOROSIS IN POSTMENOPAUSAL WOMEN WITH MS

“Cumulative data indicate that management of osteoporosis in postmenopausal women with MS should be incorporated into their care plans,” noted Dr. Bishop. Levels of estradiol, progesterone, and testosterone are severely decreased at menopause. “However, the standard dose of equine-derived estrogen (Premarin®) does not give adequate levels of estradiol to preserve bone,” she added. Estradiol tablets (Estrace®) are 100% human estradiol containing 0.5 mg, 1 mg, or 2 mg of estradiol. She emphasized that prevention of bone loss requires estradiol blood levels at or above 90 pg/mL per day.

According to Dr. Bishop, adequate prevention of osteoporosis requires:

• calcium, magnesium, and vitamin D supplements;
• weight-bearing exercise; and
• hormones: estradiol (0.5–2.0 mg/d), progesterone (Prometrium®, 100 mg/d), and micronized testosterone (1.0–4.0 mg/d).

The combination of hormonal therapy, calcium and magnesium supplements, and exercise has a greater protective effect than calcium or exercise alone—or exercise and calcium without hormone therapy, she added. MSX

—Rosalee L. Blumer

COMMON CAUSES OF OSTEOPOROSIS IN MS

• Immobility, especially decreased weight-bearing activity
• Low body weight
• Hypogonadism
• Menopause in women not receiving hormone replacement
• Testosterone deficiency in men with MS
• Repeated corticosteroid use


We want to hear from you.

Please send us your: Comments • Case Studies • Suggestions • Meeting Information • Letters
Relation of MRI Markers of Cerebral Injury to Cognitive Impairment in MS

Cognitive impairment affects approximately half of MS patients and can have a profound effect on functioning even when motor dysfunction is limited. While research interest has expanded, more data are needed to connect magnetic resonance imaging (MRI) findings with neuropsychologic test results in MS patients with cognitive impairment.

Along with other MRI evidence relating to cognition, a number of studies have shown that a neuron-specific marker, N-acetyl aspartate (NAA) is related to axonal damage and loss. Investigators from the State University of New York at Stony Brook conducted a study to determine how MRI markers such as NAA and cerebral atrophy correlate to practical measures of cognitive impairment.

Thirty-seven MS patients were selected because they exhibited signs of mild to moderate cognitive impairment. Approximately 60% had relapsing-remitting MS. The remainder had secondary progressive MS. Subjects underwent a battery of neuropsychologic tests and had MRI examinations assessing central cerebral atrophy, NAA ratios, and lesion volume.

This study, supported in part by the National Institutes of Health and the National Multiple Sclerosis Society, identified “a clear and consistent association” between MRI measures and cognition, according to the authors, with central atrophy having the strongest correlation. Differences in atrophy accounted for almost half the variability in cognitive performance observed between patients and the combination of MRI measures accounted for even more of the variability in cognition.

They noted that this is the first study known to assess such a variety of MRI measures and cognitive performance “in an MS subgroup selected for cognitive dysfunction.” The authors added that “these patients represent those in need of targeted interventions to improve cognition.”

Christodoulou C, Krupp LB, Liang Z, et al. Cognitive performance and MR markers of cerebral atrophy having the strongest correlation. Differences in atrophy accounted for almost half the variability in cognitive performance observed between patients and the combination of MRI measures accounted for even more of the variability in cognition.

TENS Reduces Spasticity in MS Pilot Study

Spasticity is present in most patients with MS and it can significantly limit basic functions such as ambulation and activities of daily living. Transcutaneous electrical nerve stimulation (TENS) may decrease spasticity and improve voluntary motor control in MS patients, according to a pilot study conducted by researchers at Hacettepe University School of Physical Therapy and Rehabilitation in Ankara, Turkey.

Ten MS outpatients (four female, six male) who experienced mild to moderate plantar flexor spasticity according to the Modified Ashworth Scale (MAS, a 1–5 scale used to measure spasticity) participated in the study. Two subjects had primary progressive MS and eight had the secondary progressive form of the disease. Only ambulatory patients (classified by a score of 6 or less on the Expanded Disability Status Scale) who were clinically stable for three months prior to the study were included.

High-frequency TENS (100 Hz, width of 0.3 msec) was applied to the spinal cord level corresponding to the selected spastic muscle group for 20 minutes each day for four weeks. The Ambulation Index (AI), which assesses mobility by evaluating the time and degree of assistance required to walk 25 feet, and MAS scores were evaluated before and after the four weeks of treatment.

According to the researchers, TENS treatment resulted in a statistically significant reduction of spasticity in both extremities as measured by myoelectrical activity (pertaining to the electric or electromotive properties of muscle) and the MAS. However, AI ratings did not improve significantly. During the treatment period, the only side effect reported was the development of skin irritation under the electrodes by one of the participants.

The authors noted two limitations to the study. First, there was no control group. Second, the frequency and severity of pain and muscle spasms were not evaluated. Nevertheless, they believe TENS may prove to be a useful component of physical therapy programs for MS patients because it is relatively easy to use and has few adverse effects. They concluded that a larger, placebo-controlled study of TENS in patients with MS-related spasticity is warranted.


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CONTINUING EDUCATION CONFERENCE CALENDAR

August 30–September 2, 2003
Seventh Congress of the European Federation of Neurological Societies. Location: Helsinki, Finland. Contact: EFNS 2003 Secretariat, 17 Rue du Cendrier, PO Box 1726, CH-1211, Geneva 1, Switzerland; 41-22-908-0488; fax: 41-22-732-2850; e-mail: efns03@kenes.com; Web site: www.kenes.com/efns2003.

September 5–7, 2003
Multiple Sclerosis Nurse Update Meeting. Location: Orlando, Fla. Contact: Serono Symposia International, One Technology Place, Rockland, MA 02370; (800) 283-8088 (USA only) or (781) 982-9000; fax: (781) 681-2915; e-mail: dawne.green@serono.com; Web site: www.seronasymphosia.org.

September 17–20, 2003
19th Congress of the European Committee for Treatment and Research in Multiple Sclerosis. Location: Milan, Italy. Contact: ECTRIMS 2003, c/o AKM Congress Service, PO Box Clarastrasse 57, CH-4005, Basel, Switzerland; 41-61-686-77-11; fax: 41-61-686-77-88; e-mail: info@akm.ch; Web site: www.akm.ch/ectrims2003.

October 19–22, 2003
128th Annual Meeting of the American Neurological Association. Location: San Francisco. Contact: Lori Anderson, ANA, 5841 Cedar Lake Rd, Suite 204, Minneapolis, MN 55416; (952) 545-6284; fax: (952) 545-6073; e-mail: loranderson@llmsi.com; Web site: www.aneuroa.org.

November 8–12, 2003
33rd Annual Meeting of the Society for Neuroscience. Location: New Orleans. Contact: Society for Neuroscience, 11 Dupont Circle NW, Suite 500, Washington, DC 20036; (202) 462-6688; fax: (202) 462-9740; e-mail: info@sfn.org; Web site: www.sfn.org.

2003 MS TRUST ANNUAL CONFERENCE
Save the date for the 2003 MS Trust Annual Conference in Harrogate, UK. The meeting will be held November 2–4 at the Majestic Hotel. The theme is “MS: Maintaining the Momentum.” Plenary sessions will cover topics such as MS management guidelines, challenges faced by the primary care team, and new models of practice for the future. Seminar topics include assessing cognitive impairment, pregnancy and parenthood issues for individuals with MS, genetics, and diagnosis and management of depression. For more information and a registration packet, please contact Packer Forbes Communications, 53 Cavendish Rd, London, SW12 0BL, UK; 44-20-8772-1551; fax: 44-20-8772-1552; e-mail: MS2003@packerforbes.com; Web site: www.mstrust.org.uk.

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