

# Helping Patients Manage Multiple Sclerosis

Pharmacists can provide important information about drug therapy

by Jorja Masters

**M**ultiple sclerosis (MS) is a complex disease characterized by a variety of symptoms that can limit an individual's ability to perform daily tasks. There are non-drug and drug therapies available to treat these symptoms, but many patients may be unaware of these options or too overwhelmed to know where to begin. In addition, the agents used to modify the progression of the disease can cause unwanted side effects. Pharmacists can play an active role in helping patients manage multiple sclerosis by providing information about treating disease symptoms, preventing adverse drug reactions, and improving drug administration. This can lead to increased patient adherence and an improved quality of life.

## **PATHOPHYSIOLOGY AND PREVALENCE**

Multiple sclerosis is an inflammatory disease that affects the central nervous system (CNS).<sup>1</sup> Current theory suggests that MS is an autoimmune disorder in which the body's immune system attacks the myelin sheath surrounding brain, spinal cord and optic nerve fibers. The myelin is destroyed and replaced by scar tissue, called plaques or scleroses, which inhibits the conduction of nerve impulses to and from the brain.

The symptoms a patient presents with are a result of those lesions. The actual trigger that causes the immune attack and subsequent inflammation and neurodegeneration is unknown, but substantial advances have been made to understand this process.<sup>2</sup>

In 1990, Anderson et al estimated that MS affected between 250,000-350,000 people in the United States.<sup>3</sup> The National Multiple Sclerosis Society estimates that approximately 400,000 Americans cur-

rently have MS, with 2.5 million people affected worldwide. Diagnosis usually occurs between the ages of 20 and 50, and women are twice as likely to have the disease than men.<sup>4</sup>

## **SYMPTOMS AND CLINICAL COURSE**

The symptoms of MS vary among patients and are unpredictable. They may present suddenly and can occur in episodes or disappear completely. Early symptoms include numbness or tingling in the limbs, difficulty walking, and blurred vision. Other common symptoms include bladder dysfunction, spasticity, fatigue, depression, cognitive changes, pain and sexual dysfunction.

The disease can progress in one of four clinical courses: relapsing-remitting, secondary-progressive, primary-progressive and progressive-relapsing.<sup>5</sup> About 85% of patients are initially diagnosed with relapsing-remitting MS (RRMS), making it the most common form of multiple sclerosis. RRMS is characterized by clearly defined acute attacks (relapses or exacerbations) followed by a complete or partial remission in which the disease does not progress. About 50% of patients with RRMS will eventually develop secondary-progressive MS in which the disease steadily worsens. These patients may or may not experience acute attacks, and if they do, they will experience only minor remission.

Primary-progressive MS is relatively rare, affecting about 10% of patients diagnosed with MS. Patients do not experience distinct relapses; instead there is a gradual and continuous worsening of the disease. The rate of decline varies among patients and some may experience occasional plateaus or temporary minor improvements.

Progressive-relapsing MS is also relatively rare, presenting in about 5% of pa-

tients. This is like primary-progressive MS in that the disease steadily worsens from the onset, but differs in that the patient experiences distinct relapses, with or without remission.

## **DISEASE-MODIFYING TREATMENT**

There are currently six disease-modifying agents (DMAs) approved for use in the relapsing forms of multiple sclerosis (including patients with secondary-progressive MS still experiencing relapses). These medications include interferon beta-1a (Avonex<sup>®</sup>, Rebif<sup>®</sup>), interferon beta-1b (Betaseron<sup>®</sup>), glatiramer acetate (Copaxone<sup>®</sup>), mitoxantrone (Novantrone<sup>®</sup>) and natalizumab (Tysabri<sup>®</sup>). While none of these is a cure for MS, they are currently the best available methods to slow progression of the disease. These agents have been shown to reduce the frequency and severity of clinical relapses, to reduce the number of CNS lesions as seen on MRI scans and may possibly reduce the progression of disability.<sup>4,6,7</sup> The Medical Advisory Board of the National Multiple Sclerosis Society recommends that treatment with an interferon-beta or glatiramer acetate be initiated as soon as possible following a definite diagnosis of a relapsing form of multiple sclerosis.<sup>8</sup>

## **PATIENT EDUCATION**

Having realistic expectations about therapy outcomes is important for patients initiating treatment with a disease-modifying agent. Some patients may expect to feel better and could become frustrated and stop administering the drug if they feel it is not helpful. Pharmacists can emphasize that these agents are not a cure for MS and will not prevent symptoms from recurring. Instead, they alter the natural course of the disease and provide important long-term benefits that can't necessarily be seen on a daily basis.

Patient responses to treatment also vary; some may experience a greater reduction in relapses than others. Monitoring the progression of disease lesions with MRI scans may be helpful for patients wishing to visualize the benefit of their medication. Some patients may also find it encouraging to monitor their ability to perform activities of daily living (ADLs) over the long term.

Maintaining realistic expectations of the medication and understanding what changes, if any, are perceived visibly is important in improving patient adherence and confidence in drug efficacy.

### **MEDICATION ADMINISTRATION AND SIDE EFFECT MANAGEMENT**

Of the six approved disease-modifying agents, mitoxantrone and natalizumab are intravenous infusions that must be given in special treatment centers due to extra monitoring requirements. The three interferon-beta formulations and glatiramer acetate can be administered at home by the patient or caregiver. Avonex® is the only intramuscular injection and is administered weekly. The remaining three are injected subcutaneously daily (Copaxone®), every other day (Betaseron®) or three times per week (Rebif®). Patients using these medications may benefit from pharmacist-provided education on proper administration and side-effect management.

It is crucial that pharmacists educate patients about proper injection technique and the importance of site rotation in order to minimize local injection site reactions such as pain, redness and swelling. Patients experiencing adverse effects may be less adherent or may even discontinue the medication. Suggestions to decrease local pain, such as allowing the medication to warm to room temperature before injection or applying an ice pack to the area before and/or after administration, can also be helpful. Periodic review of technique is also important and provides an opportunity for pharmacists to assess patient problems and provide positive feedback, support and encouragement.

In addition to injection site reactions, patients using interferon preparations may experience flu-like symptoms such as fever, chills, headache, muscle aches and fatigue after administration. Acetaminophen or nonsteroidal anti-inflammatory agents (NSAIDs) such as ibuprofen may help to decrease these symptoms when taken 30 minutes prior to administration and at regular intervals thereafter. Alternatively, patients may prefer to administer the dose at bedtime and sleep through the side effects.

Flu-like symptoms occur less frequently with Copaxone®. However, some pa-

tients taking this medication experience chest pain, shortness of breath, flushing or lightheadedness after administration. These symptoms usually last for about 15 minutes. In these instances, patients may find it helpful to start at one-fourth the initial dose with weekly increases by that same amount until the full dose is achieved.<sup>9</sup>

### **MEDICATION STORAGE**

Information about proper medication storage, preparation and disposal is also essential for pharmacists to discuss with patients. Requirements regarding refrigeration, duration of room temperature storage and protection from light vary with each medication. Medication preparations are also different and include pre-filled syringes, auto-injectors and vials for reconstitution. Pharmacists should emphasize the importance of inspecting medication for discoloration or particulate matter before injection and provide education about correct sharps disposal.

### **MANAGEMENT OF MS SYMPTOMS**

Multiple sclerosis symptoms often interfere with the ability to perform daily activities which can be very frustrating and overwhelming for patients. Pharmacists can offer both non-pharmacological and pharmacological suggestions to help patients cope with these symptoms. If the patient would like additional resources, the National Multiple Sclerosis Society website contains a vast amount of information about common symptoms and treatment suggestions.



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### **SPASTICITY**

Spasticity refers to muscle stiffness or tightness and pain in and around joints. It can be exacerbated by extreme temperature, high humidity and infections. Non-pharmacologic treatments include exercise and daily stretching while common drug therapy includes baclofen and tizanidine. Spasticity, along with fatigue and weakness, can contribute to gait disturbances. If patients are having trouble walking or keeping their balance, physical therapy and assistive devices may be helpful.

### **FATIGUE**

Over 80% of patients experience fatigue, making it one of the most common symptoms of MS and the main reason individuals leave the workforce early. Sleep deprivation caused by nighttime awakenings from other MS symptoms and the increased energy needed to perform daily tasks are common causes of fatigue. MS fatigue is different than the fatigue experienced by individuals without the disease; it tends to occur on a daily basis, worsens as the day progresses, and is aggravated by heat and humidity.

Occupational or physical therapy and assistive devices can help patients save energy while performing daily tasks. Avoiding extreme temperatures, minimizing intake of hot foods and liquids, as well as treating symptoms such as bladder dysfunction or spasticity that are interfering with sleep patterns can help reduce fatigue. Pharmacological treatment includes modafinil, amantadine hydrochloride or psychostimulating antidepressants such as fluoxetine.

### **BLADDER DYSFUNCTION**

Bladder dysfunction is also a common complication of MS and is characterized by urgent or frequent urination, hesitancy when starting urination, nocturia, and incontinence. Left untreated, bladder problems can interfere with a patient's daily life and can lead to further medical complications such as bladder infections. Pharmacists can emphasize the importance of drinking eight glasses of water every day and stress that fluid restriction can worsen urinary problems. Taking a cranberry tablet or drinking cranberry juice daily can decrease the risk of bladder infections. Avoiding caffeinated beverages may also decrease symptoms. Some patients use absorbent pads or may prefer to perform intermittent self-catheterization. Pharmacists can inform patients that drug therapy is often quite effective and includes anticholinergic agents such as oxybutynin or tolterodine.

### **DEPRESSION**

MS is a chronic condition with life-changing effects. It is understandable that patients with MS are more likely to experience emotional changes when reacting to a new diagnosis, but the disease itself may cause depression. Pharmacists can

monitor patients for changes in mood, energy and weight, and can inquire about changes in attitude and daily activities that may suggest emotional difficulties. It is important to be empathetic and remind patients that depression is a disease and is not caused by weak character. Pharmacists can inform patients that psychotherapy and medication can be helpful in treating depression.

### CONCLUSIONS

Pharmacists can play a key role in helping patients manage the symptoms of multiple sclerosis and the side effects of drug therapy. Education begins with correct information about the benefits of disease-modifying agents and their correct storage, use and disposal requirements. Pharmacists can also act as resources for patients looking to manage their symptoms with non-pharmacological and pharmacological methods. By adequately educating patients, they can more effectively manage their disease and minimize adverse reactions, leading to improved patient compliance and an increased quality of life. ●

Jorja Masters is a third-year PharmD student at the UW School of Pharmacy. This article was written in partial fulfillment of an independent study project.

### REFERENCES

1. Dipiro JT, Talbert RL, Yee GC, et al (eds). *Pharmacotherapy: A Pathophysiologic Approach*. 6<sup>th</sup> ed. New York, NY: McGraw Hill; 2005.
2. Frohman EM, Racke MK, Raine, CS. Multiple sclerosis—the plaque and its pathogenesis. *N Engl J Med* 2006; 354:942-955.
3. Anderson DW, Ellenberg JH, Leventhal CM, et al. Revised estimate of the prevalence of multiple sclerosis in the United States. *Ann Neurol* 1992; 31:333-336.
4. Just the Facts: 2006-2007. Frequently asked questions about multiple sclerosis and the National MS Society. Available at: [http://www.nationalmssociety.org/site/PageServer?pagenam=HOM\\_LIB\\_brochures\\_just\\_the](http://www.nationalmssociety.org/site/PageServer?pagenam=HOM_LIB_brochures_just_the). Accessed on October 19, 2007.
5. Lublin RD, Reingold SC, for the National Multiple Sclerosis Society (USA) Advisory Committee on Clinical Trials of New Agents in Multiple Sclerosis. Defining the clinical course of multiple sclerosis: results of an international survey. *Neurology* 1996; 46:907-911.
6. Goodin DS, Frohman EM, Garmany GP Jr, et al. Disease modifying therapies in multiple sclerosis. *Neurology* 2002; 58:169-178.
7. Fox EJ. Management of worsening multiple sclerosis with mitoxantrone: a review. *Clin Ther* 2006; 28:461-474.
8. Disease Management Consensus Statement. Expert Opinion Paper by the National Clinical Advisory Board of the National Multiple Sclerosis Society. Available at: [http://www.nationalmssociety.org/docs/HOM/Exp\\_Consensus.pdf](http://www.nationalmssociety.org/docs/HOM/Exp_Consensus.pdf). Accessed on October 19, 2007.
9. Frohman E, Phillips T, Kokel K, et al. Disease modifying therapy in multiple sclerosis: strategies for optimizing management. *The Neurologist* 2002; 8:227-236.

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