

AUTUMN 2006

## MEDICATIONS

### WHAT ARE MAO'S AND WHAT IS TYRAMINE?

Monoamine oxidase (MAO) is an enzyme involved in the inactivation on monoamines which include norepinephrine (noradrenaline), epinephrine (adrenaline), serotonin and dopamine. There are two types of MAO in the body, MAO-A and MAO-B. MAO-A is mainly involved in removing serotonin (the neurotransmitter involved in depression and targeted by antidepressants). MAO-B is involved in removing the others. Both participate in the breakdown of dopamine. In addition to the brain, MAO is found in many places in the body including the lining of the intestines. In the intestines it is involved in inactivating tyramine. Tyramine constricts blood vessels and can cause high blood pressure/hypertensive crisis. Tyramine is abundant in certain foods such as red meats, aged cheese, sausage, other cured meats, pickled herring, sauerkraut and soy products. When drugs block the function of MAO, tyramine is absorbed and displaces adrenaline from the sympathetic nervous system resulting in the dangerous sided effects. This is called the tyramine reaction.

### RECENTLY FDA APPROVED MEDICATIONS

**ZELAPAR (Selegiline)** – Selegiline (eldepryl) is an irreversible MAO-B inhibitor which provides mild improvement in daily “on” time in PD patients with “wearing off” and “on/off” phenomenon. Selegiline is metabolized by the liver to amphetamines which partially contributes to its side effect profile including insomnia. Recently the FDA approved a new formulation, zydis selegiline (Zelapar). Zelapar dissolves on contact with saliva and mostly bypasses the liver resulting in higher blood levels with lower doses of medicine and lower amphetamine production. No water is required and it is recommended that you do not drink or eat for 5 minutes before and 5 minutes after taking this medication. The tablet is freeze-dried and should remain in its packaging until taken. Zelapar is indicated for the treatment of signs and symptoms of PD as adjunct therapy to levodopa in later disease. It has proven to provide 1.6 hours of additional “on” time without dyskinesia. There is no FDA restriction on the amount of tyramine that can be consumed while on Zelapar.

**AZILECT (Rasagiline)** – Azilect (rasagiline) is a second-generation irreversible selective MAO-B inhibitor. Unlike selegiline, there is no amphetamine production and the drug can be administered once daily. Azilect is FDA approved and has shown to be effective as monotherapy in early PD or in individuals with motor fluctuations as adjunct therapy to levodopa. Neuroprotective effects continue to be under investigation. The FDA has placed a tyramine restriction for patients who use Azilect to avoid a potential tyramine reaction. Handouts on which foods to avoid may be obtained from your physician. Of note, the drug is available in Europe and Canada without dietary restrictions.

### COMING SOON

**Rotigotine Patch: Rotigotine (Neupro)**

Neupro is a dopamine agonist. This patch delivers continuous medication through the skin over a 24-hour period. Studies have shown improvement in motor symptoms and daily function in early PD and reduction in “off” time in advanced PD. Neupro should be changed once daily and left on for 24 hours. It should be available in the spring of 2007.

**Ropinerole CR (Requip CR)**

Requip CR is a 24 hour prolonged release version of Requip, a dopamine agonist. The new version will be a once daily dosing versus 3 times daily dosing with current available formulation. The goal is to control symptoms more evenly. Clinical studies have indicated that there has been improvement in motor symptoms and daily function in early PD and reduction of “off” time and reduction in levodopa dose in advanced PD. This formulation should be available in late 2007.

### FUTURE CLINICAL TRIALS

**Duodopa**

An intestinal pump (surgically placed) that will deliver an intestinal gel containing carbidopa and levodopa directly to the intestines via a portable pump. This will be studied in advanced PD patients.

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### CLINICAL TRIALS

If you are interested in participating in or would like to learn more about clinical trials for Parkinson's Disease, please contact Robyn Gibbs at 303-783-4974.

### COMMENTS OR IDEAS FOR FUTURE ARTICLES

Please contact Josette Pressler at 303-597-1922 or e-mail [jpressler@thecni.org](mailto:jpressler@thecni.org)



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# SLEEP DISTURBANCES IN PARKINSON'S DISEASE (NON-MOTOR FEATURE OF PD)

This is the second in a series of articles regarding non-motor features of Parkinson's disease. The Summer edition of the Parkinson Press discussed Autonomic Dysfunction. As mentioned in the Summer issue, rigidity, bradykinesia, tremor and balance issues are all motor symptoms of PD. There are many non-motor symptoms that may or may not occur in the individual with PD. Sleep disturbances is another category of the many non-motor features.

It is quite common for people with PD to experience some type of sleep disturbance. The most common sleep disturbance in PD is frequent nocturnal awakenings with difficulty falling back to sleep. This is usually due to discomfort including stiffness, muscle cramping, increased tremor, difficulty with bed mobility such as rolling over in bed or the need to make frequent trips to the bathroom. In many cases, adjusting PD medications to include a bedtime dose or taking an additional dose upon awakening in the middle of the night may help.

## **Restless Legs Syndrome**

Some people with PD describe uncomfortable "creepy, crawly" sensations in their legs at night. This is often accompanied by the desire to get up and walk around or to just move the legs and of course, this may delay or prevent the person from falling back to sleep. Again, adjusting the PD medications may help resolve these sensations.

## **Sleep Apnea**

The most common form of sleep apnea is obstructive sleep apnea. The person with this condition will experience brief cessation of breathing while sleeping due to a temporary obstruction of their airway. Many people with sleep apnea may snore frequently. Unknown to the individual, they may have numerous periods of apnea during the night. Due to the many episodes of sleep apnea, the individuals' brain is not being oxygenated properly. During the day, they may experience fatigue, excessive sleepiness, decreased concentration and in severe cases, may appear confused. If sleep apnea is suspected, talk to your physician who will most probably order a sleep study and a referral to a sleep disorders specialist. Dependent upon the results of the sleep study, a machine called CPAP (continuous, positive air pressure) may be recommended. This is a device that is worn during sleep to keep the airway open.

## **REM Behavior Disorder**

Rapid eye movement (REM) is the phase of sleep when most dreaming occurs. During REM sleep, the eyes move around under the eyelids rapidly, however, the activity in other muscles in the body decreases, thus, the body is somewhat "paralyzed". REM sleep disorder is when the muscles are no longer inhibited (paralyzed) and the individual is able to move and because of this mobility the person is able to "act" out their dreams. So, if an individual is having a dream where they are being chased or in a fight, they may be punching, kicking or yelling out in their sleep. This can be not only dangerous for the individual but also for their bed partner. The person with REM Behavior Disorder does not remember their dreams. There is a high incidence of REM Sleep Disorder in people with Parkinson's disease. Some individuals have had symptoms of REM disorder prior to diagnosis of PD. Generally, the medication Klonopin (Clonazepam) can be quite effective in alleviating these symptoms.

## **Excessive Daytime Sleepiness**

Due to sleep loss with some of the above mentioned disturbances, the person may be plagued with excessive fatigue or drowsiness during the day. PD medications may also contribute towards sleepiness and may be quite problematic. Some of the dopamine agonists such as Requip and Mirapex may cause sudden onset of sleep without warning (please see drug-induced sleep attacks). The majority of anti-Parkinson medications may produce drowsiness in some individuals. The physician may prescribe an alerting type medication such as modafinil (provigil).

## **Drug-induced Sleep Attacks**

Sleep attacks are a potentially serious problem that has been described with all dopaminergic agents but is more likely to occur with dopamine agonists, pramipexole (Mirapex) and ropinirole (Requip). Sleep attacks are an extension of excessive daytime sleepiness as the majority of individuals have an appropriate warning prior to sleep onset. Patients should be warned of the potential to fall asleep while driving and once a sleep attack has occurred, the patient should no longer drive or stop the offending agent. Modafinil (provigil) has been reported to be helpful in treating sleep attacks.

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## **SUPPORT GROUPS**

We are fortunate in Colorado to have the Parkinson Association of the Rockies (PAR). PAR is a wonderful non-profit organization that has a great PD library plus has over 30 PD support groups in Colorado, Western Nebraska and Wyoming. Support groups allow patients and

families to network with others who have the same disease and to share coping strategies with the physical, social and psychological challenges that are faced on a daily basis. You can contact PAR at 303-830-1839 or check their web: [www.parkinsonrockies.org](http://www.parkinsonrockies.org)