



*Info*NEURO

Montreal Neurological Hospital  
INFORMATION FOR PATIENTS

# Mitoxantrone

For multiple sclerosis



Centre universitaire de santé McGill  
McGill University Health Centre

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Collaborators: D. Lowden Clinical Nurse Specialist , Multiple Sclerosis Clinic, B. Taugher,,  
G.Leduc , S. DeMelo, Nurse Clinician Educators, Neurology Day Centre.

Reviewed: Dr. Y. Lapierre, Dr. A.Bar-or

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## What is Mitoxantrone?

Mitoxantrone is a drug used to treat *certain* types of worsening MS. Mitoxantrone is not a cure, but it may help slow progression of the disease. It may also decrease the number of relapses that you have.

Mitoxantrone was first developed over 10 years ago as a drug to treat cancer. It is a drug that suppresses the immune system (an *immunosuppressive* drug). Suppressing the immune system can be beneficial in the treatment of MS because, in MS, certain cells in your immune system attack your brain and spinal cord. By suppressing the immune system, Mitoxantrone can help control the cells that attack myelin and cause lesions. This may help reduce the symptoms of MS in some patients.

## What should my doctor know before I use Mitoxantrone?

You and your doctor will need to talk about the risks and benefits of this medicine. For you and your doctor to decide if this medication is right for you, your doctor will need to know the following:

Tell your doctor about all the medicines you are taking, including non-prescription medicines and nutritional supplements.

Tell your doctor if you have now or had in the past:

- Previous treatment with Mitoxantrone
- Problems associated with heart disease (for example high blood pressure, high cholesterol)
- Blood-clotting problems
- Anemia or low red blood cell counts
- Low white blood cell counts
- Unusual or unexpected bleeding
- Liver disease or problems

- Previous history of cancer or benign tumours
- Cancer chemotherapy treatment
- Radiation to the chest area
- Infections
- Any known allergies or sensitivities

## What can I expect during my treatment?

- Mitoxantrone is given intravenously (infused into the vein)
- Your doctor will determine an infusion schedule: when, and how often you will receive an infusion.
- While the treatment takes 2-3 hours, count on spending about half a day in the Neurological Day Center to see a doctor and have your blood tests reviewed etc...
- As part of your treatment, you will be given an anti-nausea drug and an intravenous steroid
- Once a schedule has been set, it is important not to miss a dose. If you cannot keep an appointment, please reschedule right away.

## What can I expect after my treatment?

Generally the medication is well tolerated. You may experience some nausea and loss of appetite in the days following your treatment. You will be given medication to help control nausea, if needed. Some patients find they are very tired (fatigued) for a number of days following their Mitoxantrone dose. Speak to your doctor or nurse about ways to manage fatigue if this is a problem for you.

## Will I have to have any tests while taking Mitoxantrone?

You will need to have regular testing of your heart and blood to help avoid side effects.

**Blood samples** will be taken before each dose of Mitoxantrone to make sure your blood counts are normal and to monitor your liver function. Your doctor may also request a blood sample if you have signs of infection.

If you are a woman who is capable of becoming pregnant, you should use an effective means of birth control since Mitoxantrone may be harmful to the fetus. If you suspect you are pregnant, you must have a **pregnancy test** and should know the results before you receive your next Mitoxantrone dose.

## How long will I take Mitoxantrone?

There is a lifetime limit of Mitoxantrone treatment because high doses may damage your heart. For most patients, the limit is approximately 9 doses given over 2 to 3 years. **After you reach your limit, you should not receive any additional Mitoxantrone.** You and your doctor should both keep track of how much Mitoxantrone you get.

## Who should not take Mitoxantrone?

- Women who are pregnant, trying to get pregnant, or breast-feeding should not use Mitoxantrone because it may harm the baby.
- People who have active heart disease.

## Important information about Mitoxantrone

### Your Heart

To measure possible changes in your heart, you will have regular testing of your heart's ability to pump blood, which is called the *left ventricular ejection fraction* (LVEF). This requires having two painless tests before the first dose of Mitoxantrone is given: a MUGA scan and an electrocardiogram.

***What is a MUGA scan?*** In the MUGA scan a small amount of radioactive dye will be injected into your bloodstream. The dye attaches to red cells in the blood and then a special camera traces the cells as they pass through your heart and circulation system.

***What is an electrocardiogram (ECG or EKG)?*** An ECG is a recording of the electrical activity of the heart. For this test small disks will be placed on your chest, using sticky patches or suction cups. Wires leading from these disks connect to a machine that records electrical impulses of the heart.

You will be tested before the first dose of Mitoxantrone is given. The total amount of Mitoxantrone you receive will be carefully tracked. Your doctor will also test your heart if you show signs of heart problems. Your doctor may stop Mitoxantrone if your tests show that your heart's ability to pump blood has decreased.

## **Side effects**

The most common side effects of Mitoxantrone in clinical studies in people with MS, have been:

- nausea
- hair thinning
- loss of menstrual periods
- bladder infections
- mouth sores

## **How can the side effects of Mitoxantrone be managed?**

Most side effects of Mitoxantrone are not severe and can generally be treated.

### ***Nausea***

The nausea associated with Mitoxantrone is usually mild and lasts for less than 24 hours. Your doctor may give you a drug before you receive Mitoxantrone to help control your nausea. Here are some helpful hints to control or relieve nausea right after your dose of Mitoxantrone:

- Avoid eating for at least a few hours before treatment
- Eat small meals throughout the day
- Don't eat sweet, fried, or fatty foods
- Drink cool, clear, unsweetened fruit juices, like apple or grape juice
- Avoid odors that bother you, like cooking smells, smoke, or perfume
- Rest in a chair after eating, but don't lie flat for at least 2 hours after a meal

- Breathe deeply and slowly if you feel nauseated
- Take antacids
- Place a cool washcloth on your forehead

### ***Thinning hair***

Most people have only slight hair thinning when treated with Mitoxantrone. If your hair thins while taking Mitoxantrone, try the following:

- Mild shampoos
- Soft hairbrushes
- Low heat when drying your hair
- Not coloring or perming your hair

### ***Menstrual disorder***

Some women taking Mitoxantrone may experience changes in their menstrual periods. These changes may include a heavier or lighter menstrual flow. For some women menstruation stops. Talk to your doctor if you notice any changes in your menstrual cycle while you are taking Mitoxantrone.

### ***Fertility***

Mitoxantrone may have an impact on fertility. Speak with your doctor if you have concerns about fertility and use of Mitoxantrone.

### ***Infections***

Because it can lower your white blood cell count, Mitoxantrone can increase your risk of getting an infection. This risk is greatest within 10-14 days of treatment. Bladder infections have been the most common types of infection in people with MS treated with Mitoxantrone. You should call your doctor or nurse right away if you have difficulty or pain when urinating, an increased need to urinate, or if you have any other signs of infection, including fever, chills, sore throat, or cough.

Bladder and other infections can be treated with antibiotics. You can also take the steps below to help reduce your chances of getting an infection:

- Wash hands frequently
- Avoid people who have infections
- Eat a well-balanced diet and drink plenty of fluids
- Get plenty of rest and appropriate exercise

### **What are other possible side effects?**

Mitoxantrone is dark blue in color, so it may turn your urine a blue-green color. The white part of your eyes may also have a slight blue color. This effect should only last for a few days.

Mitoxantrone can lower your number of platelets, a type of blood cell necessary for blood clotting. If you notice any unusual bleeding or bruising, call your doctor immediately

Other side effects may also occur. Be sure to tell your doctor about any side effects, whether or not they are listed in this brochure.

#### ***Rare side effects:***

Mitoxantrone may cause congestive heart failure. The may weaken the heart muscle. This is related to the dose of medication and is unlikely to happen if your heart is properly monitored with regular tests.

Leukemia is a possible side effect which is serious, but rare.

### **Pregnancy**

Women should not become pregnant or breastfeed while taking Mitoxantrone because it may harm the fetus. If you wish to become pregnant, or are concerned that you may be already, discuss this matter with your doctor. While taking Mitoxantrone, women who might become pregnant should use effective birth control and should be sure, before each dose, that they are not pregnant by taking a pregnancy test. If you do become pregnant, contact your doctor immediately.