About Cardiomyopathy Caused by Chemotherapy

This information explains cardiomyopathy caused by chemotherapy, including symptoms, diagnosis, and treatment.

Cardiomyopathy is a condition in which your heart muscle is abnormal. One type of cardiomyopathy is called dilated cardiomyopathy. Dilated cardiomyopathy develops when the left ventricle, one of the heart’s 4 chambers, becomes enlarged and cannot pump blood as forcefully into the body (see Figure 1). This can lead to heart failure or arrhythmia. Arrhythmia is when the rhythm of your heartbeat is not regular. It can be too fast or too slow.

Figure 1. The 4 chambers of your heart
Causes

- Anthracyclines, which are a class of chemotherapy medications. These medications include doxorubicin (Adriamycin® and Rubex®), daunorubicin (Cerubidine®), epirubicin (Ellence®) and idarubicin (Idamycin®).
  - Cardiomyopathy that develops from anthracyclines is related to the dose that is given. The more of these medications that you receive, the more likely you are to develop cardiotoxicity. Cardiotoxicity is a condition in which your heart muscle is damaged and blood isn’t pumped properly.
- Trastuzumab (Herceptin®). This medication is used to treat breast cancer. It has the same effect as anthracyclines in that it is also toxic to the heart. However, its effect is reversible, so once you stop taking it, the cardiomyopathy will go away.
- Radiation received near the chest puts you at higher risk for cardiomyopathy.
- Previous heart conditions or diseases that may have caused damage to your heart, such as coronary heart disease and hypertension (high blood pressure).

Symptoms

- Shortness of breath during exercise or when lying flat
- Chest pain
- Irregular heartbeat. Your heart may feel like it’s fluttering, pounding, or beating rapidly.
- Fatigue
- Dizziness or lightheadedness
- Swelling in your legs, ankles, or feet
- Coughing
- Bloating in your abdomen (belly)

Preventing Cardiomyopathy
Cardiomyopathy can’t be completely prevented, but the following suggestions can help you reduce your risk.

- If you have hypertension, high cholesterol levels, or diabetes, make sure that they are under control.
- Avoid using alcohol or recreational drugs.

**Diagnosis**

Your doctor may perform one or more of the following tests to diagnose cardiomyopathy:

- A chest x-ray. This test can show your doctor whether your heart muscle is enlarged or not.
- An echocardiogram (echo). This is a test that uses ultrasound to produce images of your heart. It shows how your heart is beating and pumping blood and can show abnormalities in your heart muscle and heart valves.
- An electrocardiogram (EKG). This test measures the electrical activity of your heart.
- Cardiac catheterization (“cath” or angiogram). Your doctor will insert a thin catheter (long, flexible tube) into an artery in your arm or leg and thread it up to your heart. He or she will inject dye through the catheter to see your arteries with an x-ray machine. This shows if there are blockages in any of the arteries in your heart.
- Cardiac magnetic resonance imaging (MRI). This test uses a magnetic field and radio waves to create an image of your heart. This can show your doctor how your heart functions and may be used in addition to an echo.

**Treatment**

Cardiomyopathy can be treated with medications, implanted devices, or a heart transplant.

**Medication**

There are multiple types of medications that can treat cardiomyopathy. A few examples of each type are listed but there are others.
• ACE inhibitors and angiotensin II receptor blockers (ARBs), which relax your blood vessels and lower blood pressure. This makes it easier for your heart to pump. Some examples are lisinopril (Prinivil®) and losartan (Cozaar®).

• Beta blockers, which slow your heart rate and lower your blood pressure. This helps to reduce the amount of work your heart has to do. Examples are carvedilol (Coreg®) and metoprolol (Lopressor®).

• Antiarrhythmic medications, which control the rhythm of your heart. One example is amiodarone (Cordarone®).

• Diuretics (water pills), which help your body remove extra salt and fluid and improve shortness of breath and swelling. One example is furosemide (Lasix®).

Implanted devices

• Left ventricular assist device (LVAD). This device helps your heart pump blood to the body. This can be a long-term treatment or a short-term treatment for people who are waiting for a heart transplant.

• Implantable cardioverter defibrillator (ICD). This device helps control dangerous arrhythmias. If it senses a dangerous arrhythmia, it will send an electric pulse to your heart to restore a normal heartbeat.

Heart transplant

In a heart transplant surgery, your heart will be replaced with a healthy heart from a donor. This surgery is only done as a last resort if all other options have failed.

Lifestyle Changes After Diagnosis

The following lifestyle changes can help you manage cardiomyopathy if you’ve already been diagnosed with it.

• Quit smoking if you are a smoker. If you want to quit, call our Tobacco Treatment Program at 212-610-0507. You can also ask your nurse about the program.

• Weigh yourself daily. If your weight increases by 2 pounds in 1 day or 4
pounds in 1 week, call your doctor.

- Make changes to your diet and lifestyle.
  - Decrease how much salt you consume. Most people should consume no more than 2 grams of sodium per day, but talk with your doctor about the amount that is right for you. Ask your nurse for the resource **2-Gram Sodium Diet**.
  - Avoid processed foods, such as canned soups, frozen meals, and cold cuts.
- Be as physically active as you can. Speak with your doctor about how much physical activity you should be doing.
- Reduce stress. Some ways to do this include meditation or deep breathing exercises. The MSK Integrative Medicine Service provides patients and caregivers with services such as massages, acupuncture, yoga classes, reflexology, meditation, and nutritional consults. For more information, call 646-888-0800 or go to: [www.mskcc.org/cancer-care/integrative-medicine](http://www.mskcc.org/cancer-care/integrative-medicine).
- Avoid using recreational drugs and alcohol. Decrease your alcohol intake to no more than 1 drink per day if you are a woman and 2 drinks per day if you are a man.
- Get 7 to 8 hours of sleep every night.

If you have any questions or concerns, talk with a member of your healthcare team. You can reach them Monday through Friday from 9:00 AM to 5:00 PM at _____________________. After 5:00 PM, during the weekend, and on holidays, please call _____________________. If there’s no number listed, or you’re not sure, call 212-639-2000.

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