

## **Interventional Radiology: Chemoembolization**

### *What to expect and how to prepare*

*This handout explains chemoembolization, a treatment for cancer.*

### **What is chemoembolization?**

*Chemoembolization* is a treatment for cancer. It works against tumors by:

- Putting a large dose of *chemotherapy* drugs right into the tumor.
- Blocking (*embolizing*) the blood supply to the tumor. Blood carries the oxygen and nutrients to the tumor and helps it grow. When we limit the blood supply, tumor growth will slow.

### **When is it used?**

Chemoembolization is most often used to treat people who have liver cancer. It is also used to treat cancer that started in another area of the body but has spread (*metastasized*) to the liver.

The main goal of chemoembolization is to reduce the size of liver tumors. This can lessen or get rid of symptoms. It may also improve your chance of being chosen for a liver transplant.

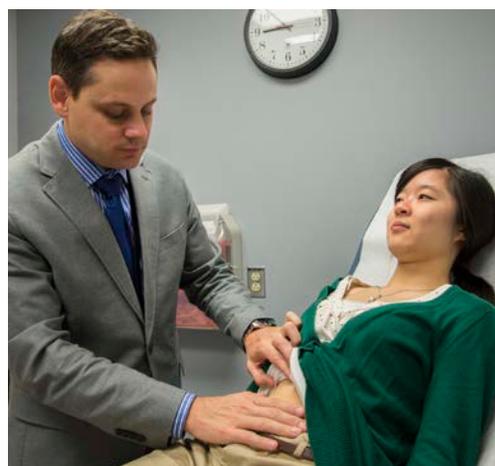
### **How will the treatment affect my liver?**

When chemotherapy drugs are injected into the liver (*hepatic*) artery, it will affect the tumor, but not your healthy liver tissue. This is because healthy liver tissue and liver tumors get their blood in different ways:

- Healthy liver tissue gets most of its blood from the *hepatic vein*. It gets very little blood from the *hepatic artery*.
- A liver tumor gets most of its blood supply from the hepatic artery. It gets almost no blood from the hepatic vein.

### **Can this treatment cure liver cancer?**

It is rare to have a full cure with chemoembolization. But some patients do have their liver cancer cured by this treatment.



*Talk with your doctor if you have any questions about your treatment.*

Chemoembolization might be the only treatment you receive. Or, it may be used with other treatments such as surgery or radiation. Your treatment plan will depend on the number and type of tumors you have.

## How is it done?

Your doctor will use X-rays to help guide a small tube (*catheter*) into an artery in your groin or wrist. The catheter tip is then moved into the artery that supplies blood to the liver tumor.

Chemotherapy drugs are mixed with a material that will block the flow of blood. This solution is sent through the catheter into the tumor.

## What drugs are used?

Your doctor will choose your chemotherapy drugs based on the type of tumor you have:

- For *hepatocellular carcinoma* (HCC), we often use a drug called doxorubicin. HCC is liver cancer that started in the liver, not cancer that has spread to the liver.
- For other tumors, we often use a mixture of 3 drugs: doxorubicin, mitomycin, and cisplatin.

## Do the drugs have side effects?

The drugs used in chemoembolization are absorbed into your body very slowly. This lessens the short-term side effects that people often have with chemotherapy. But, it does not get rid of all side effects.

### Common Side Effects

The most common side effects after chemoembolization are nausea and fatigue. Nausea is more likely to occur when the mixture of 3 drugs is used.

### Rare Side Effects

These drugs may also cause more severe side effects. These problems are rare:

- **Doxorubicin** in large doses can damage the heart. We advise that a patient receive no more than about 500 mg of doxorubicin over their lifetime. Each round of chemotherapy uses about 50 mg. This means we advise having no more than 10 treatments with this drug during your lifetime.
- **Mitomycin** can make your fingers and toes tingle or feel numb. It can also cause weakness and fatigue. In some people, it causes short-term hair loss or hair thinning. It can also affect how well your kidneys work.
- **Cisplatin** can cause ringing in the ears, hearing problems, and balance problems. It can also lower the production of some types of

blood cells for a short time. This can increase your risk of bleeding and infection.

Your doctor can tell you more about these side effects. Be sure to ask all your questions and talk about any concerns with your doctor.

## **How do I prepare for the procedure?**

First, you will meet with an *interventional radiologist* (IR). This doctor specializes in using imaging and guided minimally invasive methods to diagnose and treat health problems. At this visit:

- You will have blood drawn. The results of your blood tests will help us understand how your liver and kidneys are working. The tests will also tell the IR if your blood is clotting normally.
- If you have a history of heart disease, you will also have a heart scan scheduled for some time in the future.

After this visit, your IR will tell you if you need to make changes in the medicines you are taking. Be sure to tell your IR what medicines, herbs, and supplements you take regularly. Your IR will need to know if you are taking anything that could affect your blood's ability to clot. This includes medicines such as Coumadin (warfarin), Plavix, and aspirin, and herbs such as ginkgo biloba, licorice root, or turmeric.

## **Before Your Procedure**

### **Arrival Time**

If you are an *outpatient* (not staying in the hospital), a nurse coordinator will call you the afternoon before your procedure. If your procedure is on a Monday, the nurse will call you the Friday before. The nurse will:

- Tell you when to arrive at the hospital
- Remind you what to do on the morning of your procedure
- Answer any questions you have

### **Interpreter Services**

If you do not understand English well enough to understand these instructions or the details of the procedure, tell us **right away**. We will arrange for a hospital interpreter to help you. This service is free. **A family member or friend may not interpret for you.**

### **Allergies**

If you have had an allergy or bad reaction to *contrast* (X-ray dye) in the past, please call our Interventional Radiology Nurse Coordinator (see numbers on the last page). You may need medicine for this allergy before the procedure.

## Medicine to Protect Your Kidneys

If we need to give you contrast for the procedure and your kidneys are not working normally, we may prescribe a medicine for you to take before and after your procedure. This medicine will help protect your kidneys.

## Blood Test

You most likely will need a blood test done within the 14 days before your procedure. Sometimes, we do this when you arrive for your procedure. We will tell you if we need to draw blood before that day.

## Blood-thinning Medicines

If you take a blood thinner such as Lovenox (enoxaparin), Coumadin (warfarin), or Plavix (clopidogrel), you may need to stop taking it for 1 to 10 days before the procedure. The length of time depends on which medicine you are taking. If you have not been told what to do, talk with your provider or the clinic that prescribes the medicine. Ask when to stop taking this medicine.

**IMPORTANT:** If you have ever had a heart stent, a prosthetic heart valve, or a pulmonary embolism, or if you have atrial fibrillation with a history of a stroke, you **must** contact the provider who prescribes your blood-thinning medicine. Tell them that you are having a medical procedure. Ask what to do about your dose before your procedure.

## Diabetes Medicines

If you have diabetes and take insulin or metformin (Glucophage), we will give you instructions about holding or adjusting your dose for the day of your procedure.

## Sedation

Before your procedure, you will be given a *sedative* (medicine to make you relax) through an *intravenous line* (IV) in one of your arm veins. You will stay awake, but feel sleepy. This is called *moderate sedation*. You will still feel sleepy for a while after the procedure.

For some people, using moderate sedation is not safe. If this is true for you, you will need general *anesthesia* (medicine to make you sleep during the procedure).

Let us know **right away** if you:

- Have needed anesthesia for basic procedures in the past
- Have sleep apnea or chronic breathing problems (you might use a CPAP or BiPAP device while sleeping)
- Use high doses of an opioid pain medicine

- Have severe heart, lung, or kidney disease
- Cannot lie flat for about 1 hour because of back or breathing problems
- Have a hard time lying still during medical procedures
- Weigh more than 300 pounds (136 kilograms)

If you have any of these health issues, we may need to give you different medicines. Instead of a sedative, you might receive:

- Only a local anesthetic (numbing medicine), such as lidocaine.
- A local anesthetic and a single pain or anxiety medicine. This is called *minimal sedation*.
- *General anesthesia* (medicine to make you sleep). This medicine is given by an anesthesia provider.

## Day Before Your Procedure

- Drink lots of fluids the day before your procedure. You may eat as usual.
- If you are an *outpatient* (not staying overnight in the hospital):
  - Plan for a responsible adult to drive you home after your procedure. **You may NOT drive yourself home or take a bus, taxi, or shuttle by yourself.** You may take a bus, taxi, or shuttle **if** you have a responsible adult to ride with you.
  - IMPORTANT:** Your procedure will be rescheduled if you do not have a responsible adult to drive you home or ride with you on a bus, taxi, or shuttle.
  - Also plan for a responsible adult to stay with you the rest of the day.

## Procedure Day

### At Home

- Take your usual medicines on the day of the procedure, unless the doctor or a nurse tells you to hold them. (Some patients may need to stop taking their blood-thinning or other prescription medicines.)
- Do **not** take vitamins or other supplements. They can upset an empty stomach.
- Starting **6 hours** before your procedure, **stop eating solid foods.** You may have only *clear liquids* (liquid you can see through), such as water, broth, cranberry juice, or weak tea.
- Starting **2 hours** before your procedure, take **nothing** at all by mouth.
- If you must take medicines, take them with **only** a sip of water.
- Bring with you a list of all the medicines you take.
- Plan to spend most of the day in the hospital.

## **At the Hospital**

- You may have been told to go to Outpatient Lab for a blood draw. Do this before you check in. The lab is on the 3rd floor of the hospital, next to Outpatient Pharmacy, near the Cascade elevators.
- Unless you are told otherwise, check in at Admitting on the 2nd floor, next to Radiology. Take the Pacific elevator to the 2nd floor.
- Take the Pacific Elevator to the 2nd floor of the hospital. Admitting is on the right side of Radiology Department.
- After checking in, you will be told to go to Radiology Reception Desk.
- If there is a delay in starting your procedure, it is usually because we need to treat other people with unexpected and urgent problems. Thank you for your patience if this occurs.
- When we are ready to start your procedure, a staff member will:
  - Take you to a pre-procedure area
  - Give you a hospital gown to put on
  - Give you a bag for your belongings
- While you are in the pre-procedure area:
  - Your family or a friend can be with you.
  - A nurse will ask you some health questions, take your vital signs (such as heart rate), place an *intravenous* (IV) tube in your arm, and go over what to expect. This nurse will also give you medicine to make you sleep.
  - A radiologist or physician assistant will talk with you about the risk and benefits of the procedure. They will ask you to sign a consent form, if you have not already signed one.
  - You will be able to ask any questions you have.
  - If you are scheduled to have general anesthesia, the anesthesia care provider will meet you and go over your health history.
- The nurse will then take you to the Radiology suite. This nurse will be with you for the entire procedure and will monitor you afterward.

## **What happens during the procedure?**

- If you need an interpreter, they will be in the room or will be able to talk with you and hear you through an intercom.
- You will lie on a flat X-ray table.
- X-rays will be taken during the procedure to help your doctor see your liver and the tumor(s).
- Wires will be placed on your body to help us monitor your heart rate.

- You will have a cuff around your arm. It will inflate from time to time to check your blood pressure.
- Prongs in your nose will give you oxygen. A probe on one of your fingers will show us how well you are breathing the oxygen.
- For your safety, the entire medical team will ask you to confirm your name again. They will go over your allergies, and explain what we plan to do. We do this for every procedure and every patient.
- A radiology technologist will use a special soap to clean your skin around the puncture site in your groin or wrist. The technologist may need to shave some hair in the area where the doctor will be working.
- Tell the technologist if you have any allergies.
- Before the catheter is inserted, the doctor will inject a local *anesthetic* (numbing medicine). You will feel a sting for about 10 to 15 seconds. After that, the area should be numb and you should feel only minor discomfort.
- It is normal to feel pressure or slight pain at the site that is being treated. Please tell your nurse if you feel pain.
- Your doctor will guide a small catheter into an artery in your groin or wrist. The tip will be moved into the artery that supplies blood to the tumor.
- The chemotherapy drug will then be sent through the catheter into the tumor. The catheter is then removed.
- Pressure will be applied to the insertion site for a short time. Often, a special device is used to help close the puncture site. A bandage will then be placed over the site.

## **What happens after the procedure?**

- If you:
  - Had general anesthesia, you will be watched for a short time in the Radiology department or recovery room.
  - Are an outpatient, you will be moved to a short-stay unit in the hospital to complete your recovery.
  - Are staying overnight in the hospital, you will be moved to a room on an inpatient unit. You will spend the night in this room. Most patients can go home by 11 a.m. the next morning.
- When you are settled into the short-stay unit or the inpatient unit:
  - Your family member or friend will be able to be with you.

- For 2 to 6 hours, **you will need to lie flat on your back on a stretcher or bed.** The length of time depends on whether or not you had a vascular closure device applied after the procedure.
- During this time, you must keep your limb where the catheter was inserted very still, to lower the risk of bleeding from the artery. This will be either your leg or your wrist, depending on where the catheter was inserted. If needed, your nurses may use an arm board to help stabilize your wrist.
- You will be able to eat and drink.
- Before you get up to walk, we will assess you to make sure you can walk safely. A nurse or patient care technician (PCT) will help you get out of bed. Most times, we place a gait belt around your waist for extra safety.

### **If You Are an Outpatient**

You will be able to go home once:

- You are fully awake
- You can eat, drink, and use the restroom
- Your nausea and pain are under control
- Your vital signs are stable
- You can walk normally
- You have a responsible driver to take you home
- You have a responsible person to stay with you at home overnight

Before you leave the hospital, we will give you prescriptions for medicines to help with pain, nausea, and constipation.

### **Self-care**

#### **For 24 Hours**

The medicine that you were given to make you sleepy will stay in your body for several hours. It could affect your judgment. You may also be lightheaded or feel dizzy.

Because of this, for 24 hours:

- Do **not** drive a car.
- Do **not** use machinery or power tools.
- Do **not** drink alcohol.
- Do **not** take medicines such as tranquilizers or sleeping pills, unless your doctor prescribed them.

- Do **not** make important decisions or sign legal documents.
- Do **not** be responsible for children, pets, or an adult who needs care.

To help your recovery:

- Keep your puncture site covered with the dressing for 24 hours. Make sure it stays clean and dry.
- Do only light activities and get plenty of rest.
- Someone should stay with you overnight.
- Eat as usual.
- Drink lots of fluids.
- Resume taking your usual medicines when you get home. Take only the medicines that your doctors prescribed or approved.

### **For 48 to 72 Hours**

- Do not lift anything that weighs more than 5 to 10 pounds (a gallon of milk weighs almost 9 pounds).
- Do only moderate activities. This will allow your puncture site to heal.
- Avoid hard work and any exercise that makes you breathe harder or makes your heart beat faster.

### **Dressing Care**

- After 24 hours, remove the dressing. Check the puncture site for any signs listed under “When to Call” on page 10.
- You may shower after 24 hours. Do **not** scrub the puncture site. Allow warm, soapy water to gently run over the site.
- After showering, gently pat the site dry with a clean towel.
- Do **not** apply lotion, ointment, or powder to the site.
- You may apply a new bandage. Change the bandage every day for the next few days. Always check the site when you remove the bandage.
- Do **not** take a bath, sit in a hot tub, go swimming, or allow your puncture site to be covered with water until it is fully healed.
- You may have a little discomfort at the puncture site for 1 to 2 days.

### **Side Effects**

Most patients have some side effects after chemoembolization. They include pain, nausea, a low fever, and chills. This is called *post-embolic syndrome*.

- **Pain** is a common side effect. It occurs because the tumor’s blood supply has been cut off. Lack of blood and oxygen causes pain in any

tissue. Most times, this pain can be treated with pain medicines you take by mouth.

- **Fatigue** and **loss of appetite** are common for 2 weeks. These symptoms may last longer. Most times, these are part of a normal recovery.
- You may have **fevers** for about 1 week.

Most patients can return to their normal activities within 1 week.

## **Follow-up**

- You may need more than 1 session of chemoembolization. If so, you will wait about 1 month between sessions. This wait time makes it easier on your liver.
- *Computed tomography* (CT) scans may be done the day after each chemoembolization. The scans will show where the chemotherapy material has collected in the liver.
- More CT scans will be done 3 months after your last treatment. These scans will show how much the tumors have shrunk.
- Most doctors advise their patients to have repeated CT or *magnetic resonance imaging* (MRI) scans. These scans will check for any new liver tumors. Most times, these scans are done:
  - Every 3 months for 2 years
  - Then, every 6 months for the rest of your life
- Chemoembolization can be repeated many times over many years, as long as:
  - There is blood flow to your tumor(s)
  - Your liver is working well
  - Your health allows you to handle the procedure

## **When to Call**

Call one of the numbers listed on page 11 under “Who to Call” if you have any of these symptoms:

- Bleeding from the puncture site that fills your bandage
- Swelling at the puncture site
- A lot of bruising around the puncture site
- Signs of infection at the puncture site: redness, warmth, tenderness, and discharge that smells bad
- Fever higher than 101°F (38.3°C)

- Chills
- A new rash that does not go away
- A lot of pain, or pain that does not go away with pain medicines your doctor prescribed
- Nausea that does not ease when you take anti-nausea medicine as directed

### **Urgent Care**

**Call 911 or go to the nearest emergency room if you have:**

- Chest pain
- Trouble breathing
- Slurred speech
- Balance problems or trouble using your arms or legs

### **Who to Call**

- Weekdays from 8 a.m. to 4:30 p.m., call the Interventional Radiology Nurse Coordinator at 206.598.6209.
- After hours and on weekends or holidays, call 206.598.6190 and ask to page the Interventional Radiology Fellow on call.

### **Questions?**

Your questions are important. Call your doctor or healthcare provider if you have questions or concerns.

UWMC Imaging Services:  
206.598.6200