Intra-arterial Chemotherapy Given with Blood Brain Barrier Disruption

What is blood brain barrier disruption?

The blood brain barrier is a group of special cells that limit the entry of large molecules into the brain. This barrier can also limit antibiotics and chemotherapy from getting into the brain to treat certain diseases.

Brain tumors partially open or break down this barrier. That is why brain tumors can be easily seen on a MRI or CT scans. This opening only allows a small amount of medicine into the brain. The goal of chemotherapy with blood brain barrier disruption is to give more chemotherapy into the brain to treat your brain tumor.

How is the blood brain barrier opened?

The blood brain barrier is opened by giving a medicine called Mannitol into the artery that feeds blood to the brain tumor. This is done in the x-ray department during a procedure called an angiogram. During this procedure:

- You are put to sleep with general anesthesia.
- A small area on your groin is cleaned and then the doctor inserts a small tube called a catheter into the artery in your groin.
- The catheter is guided into the blood vessel that supplies the side of the brain where the tumor is located. When the catheter is in the right position, the Mannitol is injected. Mannitol shrinks the special cells and opens the barrier.
Chemotherapy is given through an intravenous (IV) line into the vein before the barrier is opened and into the artery after the Mannitol is given.

When the barrier is open, all the chemotherapy can get into the brain to treat the brain tumor.

What will happen after the procedure?
A CT scan is done at the end of the procedure to measure the amount of blood brain barrier disruption. You will be taken to the Post Anesthesia Care Unit (PACU) and will stay there about 2 hours before you return to your hospital room. The same procedure will be repeated the next day.

You will be discharged from the hospital on the day after the second treatment as long as you are medically stable. This procedure, which includes two blood brain barrier disruption treatments, will be repeated every 4 to 6 weeks for one year.

Are there side effects from this procedure?
Side effects include those that can happen with having a general anesthetic and an angiogram. Other side effects that may happen because of the open blood brain barrier procedure may include:

- Seizures
- Changes in your level of alertness
- Weakness in your arms and legs
- Fluid and electrolyte abnormalities

This section was missing from this handout – pretty standard section in all of our procedure/surgery handouts. The bullet points are just suggestions for what you may want to include – needs to be specific to this procedure.
When should I call the doctor?

Call your doctor right away if you have any of the following:

- Fever of 100.4 degrees Fahrenheit (38 degrees Celsius) or higher
- Changes in vision
- Headache
- Problems with speech
- Dizziness or balance problems that make it hard to walk
- Plus any of the above side effects