Intraperitoneal Chemotherapy (IP Chemo)

Some cancers of the abdominal or gastrointestinal region can be treated using a type of chemotherapy infusion called intraperitoneal. There are two types of intraperitoneal chemotherapy. The first is used at the bedside in the hospital or in an outpatient facility. The second type is done in the operating room, after surgery to debulk (partial or total removal) a tumor. In this article, both types will be discussed.

What is intraperitoneal (IP) chemotherapy?

Intraperitoneal is described as space within the peritoneum. The peritoneum is the membrane (thin tissue) that lines the abdominal cavity and surrounds your abdominal organs. Chemotherapy can be administered directly into this space to treat cancers of the abdominal region such as gastric (stomach), appendiceal (appendix), and ovarian.

There are two types of IP chemotherapy. The first type is infused through a port in the abdomen and is administered in either the hospital or an outpatient (clinic) setting. The second type, referred to as Hyperthermic Intraperitoneal Chemotherapy (HIPEC), is administered in the operating room after surgery to debulk tumor tissue. The chemotherapy is warmed and infused directly into the intraperitoneal cavity.

Why is intraperitoneal chemotherapy prescribed?

Higher doses of chemotherapy can be administered intraperitoneally as compared to through an IV (intravenously). By administering chemotherapy through this route you minimize the systemic (entire body) effects that can be caused by IV chemotherapy. IP chemotherapy is exposed only to your peritoneal cavity, minimizing side effects in the rest of the body. However, for IP chemotherapy to be effective, the surgeon must be able to remove (or debulk) the tumor(s) to a size of less than 1cm being left behind. The IP chemotherapy is unable to penetrate a tumor larger than 1 cm in diameter.

During surgery to debulk a tumor, cancer cells may break off and still be in your body. Hyperthermic IP chemotherapy is administered to directly kill these cells after surgery. The chemotherapy is warmed because it is thought that heat helps break down and eliminate cancer cells more effectively. Also, the physician will manually disperse (move around) the chemotherapy in the peritoneal cavity with his or her hands or by repositioning the patient's body, which will allow it to get into the many crevices in the abdomen, where residual cancer cells could be hiding.

Standard Intraperitoneal Chemotherapy

Prior to IP chemotherapy being administered, a port must be placed to allow the medicine to be infused into the abdominal cavity. The port is placed in the abdomen during a surgical procedure, either in the operating room during surgery to debulk a tumor, or by an interventional radiology team if no surgery is being done or there are complications during surgery. The port is placed underneath the skin and then sutured to the ribs. You can feel the port under the skin. There is a tube that extends from the port, into the peritoneal cavity. Typically a port can be used just 24 hours after it is placed, as long as there are no complications and the port is functioning properly.

Prior to your treatment, your nurse may place an IV or access your central line. You will have your labs checked. You may receive intravenous fluids and pre-medications, including anti-nausea medications and steroids. You will be prompted to use the bathroom or you may even have a foley catheter (catheter inserted into the bladder through the urethra to collect urine) placed. It is important to empty your bladder prior to your treatment as you will not be able to get up during the infusion, or the infusion would need to be interrupted. Lastly, your nurse will access your abdominal port by placing a needle directly into the port securing the needle. The nurse may or may not use a numbing medication prior to inserting the needle.
Once your port is accessed your nurse will start your infusion. Infusions can last anywhere from 30 minutes to 3 hours. The fluid infused may be only chemotherapy or a combination of chemotherapy and an IV fluid, depending upon the ordered medications. It is important that you remain still during the infusion to keep the needle from becoming dislodged from your port. You may be required to lay flat or keep your head and back only slightly elevated. Because you are lying flat and are having fluid introduced into a cavity within your belly the pressure of the fluid may press against your diaphragm and lungs and cause you to feel short of breath. You may also feel some discomfort, like a fullness after eating a large meal. It is important to notify your nurse if you become short of breath or the pressure is becoming intolerable.

After your infusion is complete, the needle will be removed from your port. You will likely be instructed to change your position every 15 minutes for 1-2 hours. This is important so that the chemotherapy is evenly distributed within your peritoneal cavity. The chemotherapy will be absorbed into your peritoneal cavity. How often you receive IP chemotherapy will depend on your treatment plan.

**Hyperthermic Intraperitoneal Chemotherapy**

During surgery to debulk a tumor, cancer cells may be left behind in the abdomen. HIPEC is administered to directly kill these cells after surgery. The chemotherapy is warmed because it is thought that heat helps break down and eliminate cancer cells more effectively.

After your surgeon has removed as much of the tumor as they can, warmed chemotherapy will be infused into the peritoneal cavity. The chemotherapy runs through a machine to warm it and fills the peritoneal cavity. The chemotherapy is then manually dispersed (moved around) by a physician using his or her hands, or by manipulating the patient's position. The goal is for the entire abdominal cavity to be uniformly exposed to the heated chemotherapy. If there are any complications, such as bleeding or the patient becomes unstable, the chemotherapy is suctioned out of the peritoneal cavity and the patient is treated for the complication. The chemotherapy is manipulated for about 90 minutes. Then the chemotherapy remains in the peritoneal cavity and the surgical wound is closed. The chemotherapy is slowly absorbed into the peritoneal cavity (abdominal cavity).

**Benefits of Intraperitoneal Chemotherapy**

- Chemotherapy is administered in a way that allows it to directly affect the cancer cells, which studies have shown can improve survival in certain types and stages of cancer.
- Potentially fewer side effects in other areas of the body.
- A higher dose of chemotherapy can be safely administered than can be prescribed for intravenous use.
- Treatment using HIPEC may require only one round of chemotherapy, which is completed in the operating room.

**Risks of IP Chemotherapy**

- Side effects can include nausea, vomiting, electrolyte imbalance, abdominal pain, and kidney injury. Some patients will experience low blood counts (called myelosuppression), which may be caused by the IP chemotherapy or IV chemotherapy given in conjunction with IP.
- Other side effects are possible based on the type of chemotherapy you are receiving. Your doctor or nurse will discuss the potential side effects related to the medications you will be receiving.
- The need to lie flat for a prolonged period of time may be difficult for some.
- Issues with your port including infection, pain, and inability to infuse chemotherapy due to kinking of the catheter.
- The penetration of chemotherapy directly into the tumor is limited, so the tumor must be debulked to less than 1cm in size.
- Metastasis beyond the peritoneal cavity may not be affected by IP chemotherapy due to minimal absorption into the bloodstream.

Please ask your provider-specific questions regarding treatment with IP chemotherapy. Always report any side effects during and after your treatment to your provider or nurse. Intraperitoneal chemotherapy is not an appropriate treatment for everyone so please consult with your provider.
diagnosing or treating a health problem or a disease. It is not a substitute for professional care. If you have or suspect you may have a health problem or have questions or concerns about the medication that you have been prescribed, you should consult your health care provider.