Gall Bladder Cancer

The Gallbladder
The gallbladder is a pear-shaped organ that lies just under the liver in the right upper abdomen. The gallbladder stores bile, a yellow, brown or greenish liquid made by the liver to digest fat. When food is being broken down in the stomach and intestines, bile is released from the gallbladder through a tube called the common bile duct. This tube connects the gallbladder and liver to the duodenum, first part of the small intestine.

Gall Bladder Cancer
Gallbladder cancer is a rare cancer. Most of the cases are unexpectedly found when a patient has surgery to remove gall stones. The wall of the gallbladder has 3 main layers of tissue.
- Mucosal (innermost) layer.
- Muscularis (middle, muscle) layer.
- Serosal (outer) layer.

Primary gallbladder cancer starts in the innermost layer and spreads through the outer layers as it grows. Gallbladder cancer is hard to find and diagnose early because there are no early symptoms. When symptoms do occur they are like the symptoms of many other conditions.

Risk Factors
These are risk factors for developing gallbladder cancer.
- Gall stone disease (cholelithiasis)
- Chronic gallbladder inflammation (porcelain gallbladder)
- Gallbladder polyps
- Congenital biliary cysts
- Age, incidence increases with age
- Female gender
- Caucasian, Southwestern Native American, or Mexican-American
- Smoking

Symptoms
The most common symptoms caused by gallbladder cancer are right upper abdominal pain followed by loss of appetite and nausea or vomiting. Fever and bloating may occur. Jaundice, yellowing of the skin or eyes, may happen if there is an obstruction in the bile ducts.
Prognosis
The prognosis (chance of recovery) and treatment options depend on:

- The stage of the cancer (whether the cancer has spread from the gallbladder to other places in the body).
- Whether the cancer can be completely removed by surgery.
- The type of gallbladder cancer (how the cancer cell looks under a microscope).
- Whether the cancer has just been diagnosed or has recurred (come back).

Treatment options may also depend on the patient’s age and general health, and whether the cancer is causing any symptoms.

Gallbladder cancer can be cured only if it is found before it has spread, when it can be completely removed by surgery. If the cancer has spread, palliative treatment may improve the patient’s quality of life by controlling symptoms and complications of the disease.

Diagnosis and Staging
These tests and procedures may be used to diagnose gallbladder cancer and determine the stage of disease (extent of the cancer). The stage of the disease is important to know in order to make a treatment plan.

- **Physical exam** and complete history of health habits, past illnesses, and treatments.
- **Ultrasound** – a radiology procedure that bounces high-energy sound waves (ultrasound) off tissues or organs to form a picture called a sonogram. An endoscopic ultrasound is performed by a gastroenterologist (doctor who specializes in diseases of the digestive tract). A small lighted tube (scope) is passed through the mouth, esophagus, stomach and first part of the intestine. The ultrasound is done internally.
- **CT scan (CAT scan)** – detailed picture of the inside of the body taken by a special x-ray machine that is attached to a computer.
- **MRI** (magnetic resonance imaging) – a radiology procedure that uses a magnet, radio waves, and a computer to make detailed pictures of the inside of the body.
- **ERCP** (endoscopic retrograde cholangiopancreatography) – a procedure performed by a gastroenterologist where a small lighted tube (scope) is passed through the mouth, esophagus, stomach, and first part of the intestine. A smaller tube or catheter is passed into the ducts, a dye is injected and x-rays are taken. If a duct is blocked, a small flexible tube (stent) may be inserted into the duct to unblock it. Tissue samples (biopsies) may be taken.
- **PTC** (percutaneous transhepatic cholangiography) – a procedure used to x-ray the liver and bile ducts. A thin needle is inserted through the skin below the ribs and into the liver. Dye is injected into the liver or bile ducts and x-rays are taken. If a blockage is found a flexible tube or stent is sometimes left in the liver to drain bile into the small intestine or to a collection bag outside the body. Tissue samples or biopsies may also be taken.
- **Biopsy** – the removal of cells or tissues to be examined under the microscope to check for cancer. Tissue can be removed during an ERCP, a PTC or during surgery.
- **Liver function tests** – blood tests that measure the amounts of certain
substances released into the blood by the liver. Higher than normal amounts can be a sign of liver disease that may be caused by the gallbladder cancer.

- **Laparoscopy** – surgery to look at the organs inside the abdomen to check for signs of disease. A thin, lighted tube (laparoscope) is inserted into a small incision in the abdomen. Tissue samples (biopsies) may be taken. The laparoscopy helps determine if the cancer can be surgically removed or if it has spread to other areas in the stomach.

- **Positron emissions tomography (PET scan)** – a PET scan is a way to make a picture of the organs and tissue inside the body. A small amount of radioactive sugar is placed into a vein. This sugar substance is taken up by cells that use the most energy. Because cancer tends to use energy actively, it absorbs more of the radioactive substance. A scanner then detects this substance and shows images of the inside of the body.

### Stages of Gallbladder Cancer

**Stage 0 (Carcinoma in situ)** – cancer is found in the innermost (mucosal) layer of the gallbladder only.

**Stage I** is divided into stage IA and stage IB.

- **Stage IA** – cancer has spread beyond the innermost layer to the connective tissue between the first and second layers or to the muscle (muscularis) layer.
- **Stage IB** – A tumor is only in the gallbladder and has not spread

**Stage II** is divided into stage IIA and stage IIB.

- **Stage IIA** – cancer has spread beyond the visceral peritoneum (tissue that covers the gallbladder and other organs in the abdomen) and/or to the liver and/or one nearby organ (such as the stomach, small intestine, colon, pancreas, or bile ducts outside the liver).

- **Stage IIB** – A tumor has extended to the perimuscular connective tissue (the layer between the muscle layer and the sero-outer layer) but has not spread elsewhere.

**Stage III A** – A tumor has spread beyond the gallbladder but not to nearby arteries or veins. It has not spread to any lymph nodes or other parts of the body.

**Stage III B** – A tumor of any size has spread to nearby lymph nodes but not to nearby arteries and/or veins or to other parts of the body.

**Stage IV** – cancer has spread to nearby lymph nodes and/or to organs far away from the gallbladder.

**Recurrent**: Gallbladder cancer that comes back after treatment.

### Treatment Groups

- **Localized (Stage I) and resectable** – the cancer is found in the wall of the gallbladder and can be completely removed by surgery.

- **Unresectable (Stage II, Stage III, and Stage IV)** – cancer has spread through the wall of the gallbladder to surrounding tissues or organs or throughout the abdominal cavity. Except in patients whose cancer has spread only to lymph nodes, the cancer is unresectable (cannot be completely removed by surgery).
Methods of Treatment

Surgery
The standard surgery for gallbladder cancer is to remove the gallbladder, a wedge resection of the liver, resection of the extra hepatic (outside of the liver) bile duct, and resection of the regional lymph nodes. If an unsuspected gallbladder cancer is found after a laparoscopic cholecystectomy (gallbladder removal through a scope), more surgery may be needed to remove any remaining cancer.

Radiation Therapy
Radiation therapy uses high-energy x-rays or other types of radiation to kill cancer cells. There are two types of radiation therapy. External beam radiation uses a machine outside the body to send radiation to the cancer. Internal beam radiation uses a radioactive substance sealed in needles, seeds, wires, or catheters that are placed directly into or near the cancer. Radiation may be given in combination with chemotherapy. The way radiation therapy is given, or if it is given, depends on the type and stage of the cancer being treated.

Chemotherapy
Chemotherapy uses drugs to stop the growth of cancer cells, either by killing the cells or by stopping the cells from dividing. Unlike surgery and radiation therapy, chemotherapy is a systemic treatment that can reach cancer cells throughout the body. Chemotherapy is sometimes used along with radiation therapy to make the radiation therapy more effective.

Clinical Trials
Clinical trials, exploring ways of improving local control, may be available using chemotherapy with or without radiation.

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