

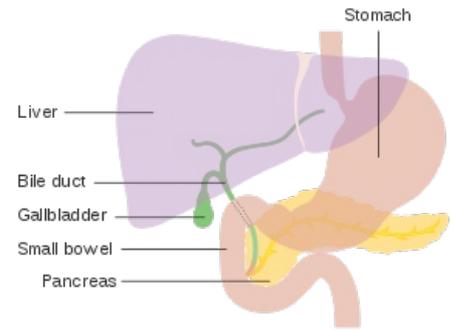
# Tumors of the liver and subhepatic region

Tumors of the liver and subhepatic region often have unfavorable prognosis. The tumors of the subhepatic region include tumors of the bile ducts, gallbladder and the head of the pancreas.

## Tumors of the liver

It can be classified into two categories:

- Primary (benign or malignant)
- Secondary (metastases - mainly originating from the gastrointestinal tract)



Liver and subhepatic region

## Benign tumors

### Pathological classification

According to the tissue from which the liver tumors originate, benign tumors of the liver could be divided into epithelial, mesenchymal and mixed.

#### Epithelial tumors

- Hepatocellular - nodular transformation, focal nodular hyperplasia, hepatocellular adenoma
- Cholangiocellular - gallbladder adenoma, biliary cystadenoma

#### Mesenchymal tumors

This group includes tumors arising from the interstitium and perivascular tissues:

- Lipoma
- Myelolipoma
- Angiolipoma
- Leiomyoma

#### Mixed tumors

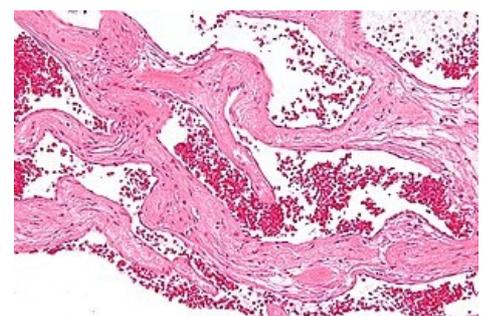
- Mesenchymal hamartoma (= noncancerous tumor-like malformation composed of an abnormal mixture of cells and tissue)
- Benign teratoma (= tumor consisting of several different kinds of tissue, such as teeth, bone, hair or muscle; most common sites are the ovaries, testicles and the coccyx bone)

## Hepatic hemangioma

Hepatic hemangiomas are the most common type of benign tumors of the liver, composing of clusters of blood-filled cavities that are lined by endothelial cells and supplied by the hepatic artery. The patients are often asymptomatic, therefore the discoveries of hepatic hemangiomas are mostly accidental - from imaging methods for other pathologies. Biopsies are not performed because there is risk of massive bleeding.

The hepatic hemangiomas could be of varying sizes:

- Small - from mm up to 3 cm
- Medium - 3 cm to 10 cm
- Giant - could be larger than 10 cm



Cavernous hepatic hemangioma

## Therapy

Small and medium lesions are conservatively treated, with regular monitoring. Larger lesions, however, could progress with complications and symptoms that could need further therapies or surgical intervention.

## Focal nodulation hyperplasia

Focal nodulation hyperplasia (FNH) is the second most common type of benign liver tumor. It is difficult to distinguish from malignant tumors, macroscopically and microscopically. It could be made up of an accumulation of hepatocytes, Kupffer cells and small bile ducts with congestion of the fibrous septa. FNH occurs 2-8 times more often in women, usually in individuals between 20-50 years old, which suggests relationship with increased estrogen levels. The probability of occurrence increases significantly in puberty and pregnancy, due to its association with hormonal influences and the use of hormonal contraception.

## Clinical picture

- Does not manifest itself, usually discovered by accident
- Approximately 80% of cases does not exceed 5 cm in size
- Larger ones may manifest as other tumors

## Diagnostics

Ultrasound, CT and scintigraphy are used for diagnosis; biopsy could be used for confirmation

## Treatment

Usually FNH is treated conservatively and monitored regularly every 3 to 6 months. However, in the case that the patient is symptomatic, if there is inconclusive biopsy findings or if there is suspicion for malignancy, resection could be considered.

## Hepatic adenoma

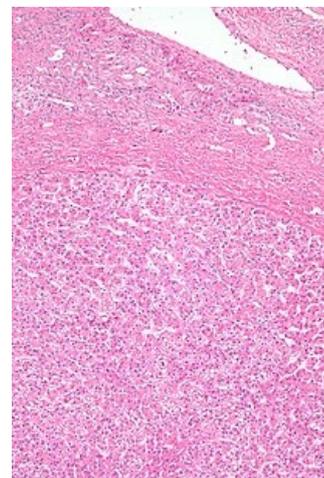
Liver adenoma or hepatocellular adenoma is a rare type of benign liver tumor. It is also associated with the use of oral contraceptives, mainly affecting women aged between 30 to 40 years of age. In 30% of the cases, it involves perforation and hemorrhage could occurs.

## Therapy

For lesions smaller than 5 cm, treatment usually follows the conservative approach. On the other hand, larger lesions greater than 5 cm could increase the susceptibility to hemorrhage or transformation into malignancy, thus resections are preferred.

## Malignant tumors

Malignant tumors of the liver could also be divided into primary and secondary. These include hepatocellular carcinoma, fibrolamellar carcinoma, cholangiocarcinoma, hepatoblastoma, mesenchymal malignancies (angiosarcoma, fibrosarcoma) and others (for example carcinoid).



Hepatic adenoma

## Hepatocellular carcinoma

*Hepatocellular carcinoma* (HCC) is the most common primary malignant liver tumor. Hepatocellular carcinoma is the 5th most common tumor in men and 8th in women worldwide, as well as the 3rd leading cause of death worldwide. The development of this cancer occurs most often in patients with chronic liver disease, usually involving cirrhosis of various etiologies (alcohol abuse, chronic hepatitis B and hepatitis C). The only potentially curative therapy is surgical treatment (resection or transplantation).

## Fibrolamellar carcinoma

Fibrolamellar carcinoma (FLC) is a rare type of malignant liver tumor, which is usually found in people below 40 years old. It occurs without the presence of an underlying liver inflammation or scarring such as from alcohol abuse or infection, unlike other forms of liver cancers. Therefore, individuals with healthy livers could also have fibrolamellar carcinoma.

The exact cause is not clearly understood, but studies suggest that the deletion on chromosome 19 could contribute to the etiology. In addition, it is found to be a somatic mutation, hence, not inherited.

In the early stage of fibrolamellar carcinoma, patients usually do not exhibit symptoms. If symptoms are present, they are often non specific, for instance: weight loss, having abdominal pain.

## Cholangiocarcinoma

Cholangiocarcinoma (CCA) is the cancer of the biliary tract, which arises from the epithelium of the biliary tree that could be intrahepatic or extrahepatic.

The cause is still not well understood, although the majority of cholangiocarcinoma cases occur sporadically. Known risk factors include primary sclerosing cholangitis (see this term), secondary sclerosing cholangitis, chronic typhoid carriage, parasitic infections (*Opisthochis viverrini* and *Clonorchis sinensis*), exposure to thorotrast (x-ray contrast medium) and choledochal cysts, all of which cause chronic biliary inflammation.

## Liver metastases

Metastases cause up to 90% of liver malignancies. In 20% they are metastases from gastric cancer, 25% from the colon, and about 50% are metastases from pancreatic cancer.

## Liver tumor therapy

## Conservative

Conservative therapy could involve the following:

- Cholecystectomy (prophylaxis of toxic cholecystitis), gastroduodenal probing and catheter insertion.
- Discontinuation of contraception or estrogen preparations - for example, if hepatic adenoma still does not subside after a period of discontinuation, surgery could be considered.
- Multiple liver metastases are treated with local intra-arterial "common systemic chemotherapy" (CHT) via the hepatic artery by subcutaneously implanted port system for 14 days, the treatment has only a minimal systemic effect.

## Surgical

Surgical treatment is indicated for benign tumors (adenomas, bleeding tumors or large hemangiomas) and some malignancies. The tumor must be bounded to one lobe (T1 - T3).

The following approaches could be used:

- Transverse or medial laparotomy, or incision along the arch
- Hemihepatectomy - is oriented in the line of vena cava - gallbladder
- Extended hemihepatectomy on the right - according to the ligamentum falciforme hepatis
- Resection of the liver lobe on the left - left lobe up to the lig. falciforme
- Peripheral resection



Liver with metastatic lesions from primary pancreas carcinoma

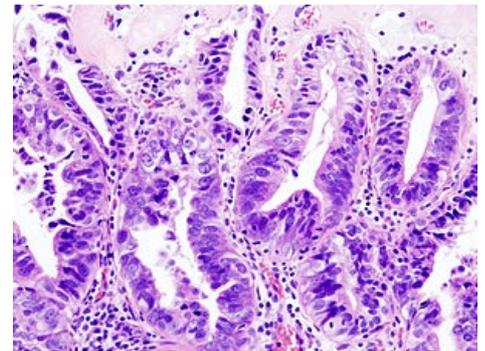
## Tumors of the subhepatic region

### Gallbladder cancer

It is a relatively rare malignant disease, affecting the female population more than the male population, with a median incidence of about 73 years.

#### Etiology

- Increased risk with cholelithiasis or calcified gallbladder; ulcerative colitis (9-21 times higher risk).
- Primary sclerosing cholangitis, congenital anomalies of the excretory tract and parasitic infections.



Gallbladder adenocarcinoma

#### Clinical picture

In the early stages of gallbladder cancer, the patients are asymptomatic. Advanced stages have symptoms similar to other (benign) diseases of the gallbladder - pain in the right lower jaw, nausea, fatty diet intolerance, loss of appetite, weight loss and jaundice.

#### Physical finding

The most common sign of gallbladder cancer is jaundice. Resistance could be felt in abdominal examination below the ribs, with hepatomegaly, there could also be ascites. Non-specific symptoms - pain below the ribs, weight loss, pruritus and fever.

#### Diagnostics

- In majority of the cases, the patients are diagnosed at an advanced stage. The main diagnostic methods used are CT and ultrasound.
- *Endoscopic retrograde cholangiopancreatography (ERCP)* (= a combination of endoscopy and x-ray; used for the diagnosis and treatment of the gallbladder, liver bile ducts and pancreas) could be used to localise the biliary obstruction.
- Cholangiocarcinoma can be diagnosed earlier than gallbladder cancer - due to obstruction and jaundice.

#### Histopathology

Adenocarcinomas predominate in 85% of the case and squamous cell or mixed carcinomas account for about 15%. Rarely, it could be adenosquamous carcinoma, leiomyosarcoma or mucoepidermoid carcinoma.

#### Surgical treatment

- Surgical treatment is the basic treatment method for early stages of gallbladder cancer, about 15 to 20% of proximally located tumors are resectable, and up to 70% of distally located tumors.

- Resectability is assessed by CT or MRI.
- In the case that resection is not possible, it is important to clear the obstruction - such as with a bypass or stent
- Postoperatively, local recurrences are common - up to 85% for gallbladder cancer

### Radiotherapy

Radiotherapy could have a palliative effect.

### Chemotherapy

Chemotherapy is also used palliatively, mainly 5-FU.

## Bile duct tumors

### Benign tumors

- Rare
- Papillomas, polyps - the essence is fibromas, lipomas, granulomas
- The bile ducts can become obstructive

### Malignant tumors

- It is most often a medullary carcinoma.
- They infiltrate the bile duct or are in the papilla (it is difficult to decide whether they come from the bile duct, duodenum or pancreatic duct).
- Unfortunately, it is worse in the upper parts - they are often diagnosed late (Klatskin's tumor).
- Clinical picture - intermittent painless obstructive jaundice with anorexia, weight loss.
- Therapy :
  - Papillary tumor - hemiduodenopancreatectomy

## Cancer of the head of pancreas

- Pancreatic head carcinoma is an adenocarcinoma originating from the epithelium of the exocrine part of the pancreas.
- Due to its location, it is typically manifested by an obstructive jaundice (due to bile duct compression), pancreatic insufficiency (pancreatic duct obstruction), dyspepsia, epigastric pain (sometimes radiating to the back).
- The prognosis of the disease is not good. The only curative treatment is resection. However, this is often not possible because the tumor is diagnosed late, palliative procedures are performed.
- Chemotherapy and radiotherapy are not effective.

## Source

- ws:Tumory jater a podjaterní krajiny

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