

Chapter 1 : Imaging the Liver

The ability to visualize focal liver lesions and diffuse liver disease and obtain imaging correlations with histopathology depends on time-related enhancement patterns.

How is fatty liver diagnosed? Physical exam If your liver is inflamed, your doctor may be able to detect it by examining your abdomen for an enlarged liver. However, your liver can be inflamed without being enlarged. Also, tell your doctor about any history of alcohol, medication, and supplement use. Blood tests Your doctor may find that liver enzymes are higher than normal during a routine blood test. Further analysis is necessary to find the cause of the inflammation. Imaging studies Your doctor may use an ultrasound to detect fat in your liver. Another imaging test similar to ultrasound is a FibroScan. Like an ultrasound, a FibroScan utilizes sound waves to determine the density of the liver and the corresponding areas of fat and normal liver tissue. Imaging studies can detect fat in the liver, but they cannot help your doctor confirm the extent of damage. Liver biopsy A liver biopsy is still considered the best way to determine the severity of liver disease. During a liver biopsy , your doctor will insert a needle into the liver and remove a piece of tissue for examination. They will give you a local anesthetic to lessen the pain. A liver biopsy is the only way to know for certain the severity of fatty liver or other liver diseases. The biopsy can also help your doctor determine the exact cause. Research is ongoing into medications that may help treat fatty liver. The first-line of treatment continues to be following recommendations to reduce your risk factors. These recommendations typically include: Reducing the number of calories you eat each day can help you lose weight and heal your liver. In the early stages, you can improve and reverse fatty liver disease by reducing or eliminating fatty foods and foods high in sugar from your diet. Choose a balanced diet with healthier foods such as fresh fruits, fresh vegetables, whole grains, and healthy fats like those in nuts and avocados. Replace red meats with lean proteins such as soy, chicken, turkey, and fish. Sweetened drinks, juices, and sodas should be avoided. What is the long-term outlook for fatty liver? The liver can repair itself, so if you take the necessary steps to treat high cholesterol, diabetes, an unhealthy diet, and obesity, you can reverse fatty liver. A liver biopsy can help your doctor identify permanent liver damage, and determine the severity of damage. If fatty liver persists and is not reversed, it can progress into liver disease, cirrhosis, or cancer. The progression to cirrhosis is dependent on the cause. In alcoholic fatty liver, continuing to drink alcohol in excess can lead to liver failure. The progression of nonalcoholic fatty liver disease varies, but in most people it does not lead to liver scarring and cirrhosis. Twenty percent of people with steatohepatitis will go on to develop worsening liver disease. If fatty liver progresses to cirrhosis, the risk of liver failure and death rises significantly. There is also a higher risk for liver cancer and death from heart disease. Protecting your liver is one of the best ways to prevent fatty liver and its complications. You can start by taking several steps:

Chapter 2 : Ultrasound Elastography: Liver Disease Detection | Greensboro Imaging

Imaging is essential for accurately diagnosing biliary tract disorders and is important for detecting focal liver lesions (eg, abscess, tumor). It is limited in detecting and diagnosing diffuse hepatocellular disease (eg, hepatitis, cirrhosis).

Your doctor will begin by asking you about your medical history and symptoms. You will also undergo a physical exam. In order to diagnose FLD and liver fibrosis, your doctor may order blood tests to evaluate liver function, including tests to assess the level of the liver enzymes ALT and AST, which can be high when the liver is fatty. Your doctor may also order imaging tests of the liver such as: Abdominal Ultrasound, which uses sound waves to produce pictures to evaluate the size and shape of the liver, as well as blood flow through the liver. On ultrasound images, steatotic livers look brighter than normal livers, and cirrhotic livers advanced fibrosis look lumpy and shrunken. Computed Tomography CT of the abdomen and pelvis that combines special x-ray equipment with sophisticated computers to produce multiple images or pictures of the inside of the body. On CT, steatotic livers look darker than normal livers. Cirrhotic livers look lumpy and shrunken. Magnetic resonance imaging MRI uses a magnetic field and radio waves to produce detailed pictures of the liver. MRI is the most sensitive imaging test for steatosis, highly accurate even in mild steatosis. When a special technique is used, MRI can calculate the percentage of fat in the liver. Ultrasound elastography is a special ultrasound technique to test for liver fibrosis. The movement of the liver caused by ultrasound wave is measured in the middle of the liver, and its stiffness or elasticity is calculated. Fibrotic livers are stiffer and moves to a greater degree compared to normal livers. The movement of fine vibration waves in the liver is imaged to create a visual map, or elastogram, that shows the stiffness or elasticity across the liver. Both ultrasound and MR elastography can detect increased stiffness of the liver caused by liver fibrosis earlier than other imaging tests and may eliminate the need for an invasive liver biopsy. Liver biopsy is an image-guided procedure that removes a small sample of liver tissue using a needle. The sample is then examined under a microscope for signs of steatosis, inflammation and damage, and fibrosis. Treatment for FLD and liver fibrosis varies depending on the cause. Doctors typically recommend treatment aimed at preventing or delaying progression of fibrosis. With treatment, the progression of liver disease can be slowed and may be reversed.

Chapter 3 : Liver disease - Wikipedia

Surgical and nonsurgical treatment options are available through Emory's liver program and include: liver resection, liver transplant, ERCP, radiofrequency ablation, and radiation oncology. Emory's liver program physicians and specialists are experienced in the medical management of all diseases of the liver.

Previous Section Next Section Introduction The liver is an important organ from an oncologic perspective. Primary hepatic neoplasms are common, especially in the presence of diffuse liver disease such as cirrhosis, hemochromatosis, and steatohepatitis. The liver is the most common site of metastasis from gastrointestinal tumors. The objectives of liver imaging in oncology are the detection of the liver disease, the characterization of liver lesions, the staging of neoplasms, the evaluation of biliary ductal status, the evaluation of treatment response, and the assessment of vascular anatomy for surgical planning and chemotherapy pump placement [2]. It is important to understand the utility of various imaging modalities to optimally address the clinical question at hand. It is an excellent test to screen the liver for biliary obstruction or gall bladder disease and to assess vascular patency. It is highly sensitive at differentiating a cyst from a solid liver lesion. However, it is not as sensitive as computerized tomography CT or magnetic resonance imaging MRI at detecting focal, solid liver lesions [3]. Though a few experienced operators have quoted high detection rates for colorectal liver metastases [4] and hepatocellular carcinoma HCC [5] with ultrasound, similar results could not be reproduced in the United States, which may be due to the patient body habitus and subspecialty practice patterns. The presence of diffuse liver disease also lowers the sensitivity of US for the detection of focal lesions. Similarly, pseudolesions, such as focal fatty infiltrations or focal fatty sparing, are sometimes difficult to differentiate from other pathologic liver lesions. On the other hand, intraoperative US IOUS and the recently introduced laparoscopic US are highly sensitive for detecting liver lesions not seen on routine preoperative imaging, for assessing the relationship between tumors and hepatic vessels, and for assessing vascular patency [7 , 8]. Likewise, endoscopic US EUS is useful for assessing the left lobe of the liver and the lymph nodes in the gastrohepatic ligament, and fine-needle aspiration of liver lesions can be performed under EUS guidance [9]. The recent addition of US contrast agents not yet approved in the United States for imaging the liver has shown promise in the characterization of various hepatic tumors [10].

Previous Section Next Section Computerized Tomography CT offers the best spatial resolution and the ability to study the entire liver in a single breath-hold. It serves as an ideal screening examination for the entire abdomen and pelvis. Recent technological advances in CT technology, such as helical CT and multidetector row helical CT, have further improved the performance of CT scanners in terms of speed of acquisition, resolution, and the ability to image the liver during various phases of contrast enhancement more precisely than was possible previously [11]. Advances in image postprocessing and reconstruction methods have enabled the acquisition of three-dimensional 3D images of the liver vasculature CT angiography to map the liver vascular anatomy and to define the liver and tumor volume. Intravenous iodinated contrast media are routinely used in the imaging of the liver. They improve the contrast-to-noise ratio between focal liver lesions and normal liver and thus aid in the detection of focal liver lesions. They also help to characterize liver lesions, based on the enhancement patterns of liver lesions during various phases of contrast circulation in the liver [12]. When performed properly, CT suffices for most clinical indications. Its limitations include the need for a high radiation dose and a low sensitivity for the detection and characterization of lesions smaller than 1 cm. Contrast-enhanced CT is contraindicated in patients with a history of anaphylaxis from contrast agents and renal failure. CT fluoroscopy is a new tool that assists in performing biopsies of liver lesions. Current multislice CT fluoroscopy systems allow real-time monitoring of the needle during biopsies and may increase the yield of biopsies and decrease the time required for performing a biopsy, with an acceptable radiation dose [13].

Previous Section Next Section Magnetic Resonance Imaging MRI has emerged as the best imaging test for liver lesion detection and characterization, because this modality provides high lesion-to-liver contrast and does not use ionizing radiation. Recent advances in MRI, including breath-hold 3D imaging and rapid half-Fourier acquisition, help image the liver in a single breath-hold with a high spatial resolution. In addition,

chemical shift imaging is very useful to differentiate pseudolesions, such as focal fatty infiltrations and focal fatty sparing, from pathologic liver lesions Fig. Various contrast agents are available to image the liver [14]. Gadolinium diethylenetriaminepentaacetic acid DTPA , the most commonly used MRI contrast agent, has an extracellular distribution and behaves similarly to the iodinated contrast agents used in CT. Its main applications include the characterization of liver tumors and MR angiography. Liver-specific contrast media, such as mangafodipir trisodium taken up by hepatocytes and ferumoxides taken up by Kupffer cells , demonstrate selective uptake in the liver and are primarily used for lesion detection [15]. These two contrast agents are also useful in characterizing specific liver tumors, such as fibronodular hyperplasia, hepatic adenoma, and HCC.

Chapter 4 : Imaging of non alcoholic fatty liver disease: A road less travelled

The stages of liver disease include: inflammation, fibrosis, cirrhosis, liver cancer and ultimately, liver failure. If caught in the inflammation or early fibrosis stage, successful treatment can allow the liver to heal itself.

Alcohol is the fourth leading preventable cause of death in the United States. However, there are still liver diseases that affect those people who do not drink. NAFLD does not typically cause symptoms, so it is diagnosed if an abnormal tests, either blood work or ultrasound, are observed. In the case of blood tests, ultrasound is the most common confirmation method. However, magnetic resonance spectroscopy MRS and magnetic resonance imaging MRI have emerged as excellent diagnostic tools for physicians. Ultrasound provides a qualitative image that allows the radiologist to see whether there is a large amount of fat in the liver. Additionally, obese patients have the highest risk of developing NAFLD but produce issues with beam penetration and liver visualization. Accuracy of MR Water and fat resonate at different peak magnetic frequencies. This allows magnetic resonance spectroscopy MRS to measure fat proton signals and differentiate between water and fat composition. Other compounds can be measured using MRS, such as sodium and phosphorus, but proton spectroscopy is easiest and handiest. The signal-to-noise ratio is highest for protons as well. Because two echo images are taken, this is sometimes referred to as dual echo imaging. The computer and radiologist then compare the two images to see where and how much fat there is. This is one of the most accurate non-invasive imaging methods for quantification of liver fat content. Another MRI technique that can be used to measure the amount of fat in a liver is done with fat-suppressed imaging. Fat-suppressing pulses are emitted during these MRIs that allow the radiologists to see the difference in signal between when the fat signal is being suppressed and when it is not. If fatty liver is present, the image of the area with fat is much darker in a fat-suppression image, because the fat signal is being blocked by the pulse. Finally, multi-parametric MRI has recently emerged as another technique to quantify liver fat content. Overall, MRS and MRI, including but not limited to IOP, fat-suppression, and multi-parametric, have a substantially higher accuracy rate than ultrasound in most patients and has the ability to quantify and qualify liver fat, leading to significantly less liver biopsies. MR is not reliant on a specific machine and technologist and, therefore, can be reproduced, unlike ultrasound. MR should be considered for use after abnormal tests to accurately diagnose NAFLD patients, especially as a third of the population has this disease. Kiran Gangadhar, et al. Quantitative and qualitative methods. September ; 45 3: Michael Dieckmeyer, et al. Imaging Patterns and Pitfalls.

They have translated years of experience in imaging liver diseases into a concise text that allows the reader to visualize, through case presentations, the nuances of liver tumor imaging. According to the preface, this is an update and expansion of a prior text published in Japanese in

DNA damage[edit] One general mechanism, increased DNA damage, is shared by some of the major causes of liver disease. These major causes include infection by hepatitis B virus or hepatitis C virus , alcohol abuse , and obesity. Acetaldehyde and free radicals generated by metabolizing alcohol induce DNA damage and oxidative stress. Alcohol-induced epigenetic alterations of gene expression appear to lead to liver injury and ultimately carcinoma. Obese mice have increased pro-inflammatory cytokines. Obese mice also have higher levels of deoxycholic acid DCA , a product of bile acid alteration by certain gut microbes, and these microbes are increased with obesity. Viral hepatitises such as Hepatitis B virus and Hepatitis C virus can be vertically transmitted during birth via contact with infected blood. Scarring in the liver often occurs as the body attempts to heal and extensive scarring can lead to the development of cirrhosis in more advanced stages of the disease. The following factors are the harmful effects of liver exposure under PM or CB. First, they have an obvious direct toxic effect on the liver. Chemicals will affect metabolism and impact liver function. Second, inflammation of liver caused by PM and CB impact lipid metabolism and fatty liver disease. Third, PM and CB can translocate from lung to liver. Because they are very diverse and each has different toxicodynamics, detailed mechanisms are not clear. Water-soluble fractions of PM is the most important part for PM translocation to liver through extra-pulmonary circulation. When PM goes through blood vessel into blood, it combines with immune cells, that will stimulate innate immune responses. Pro-inflammatory cytokines will be released and cause disease progression. These test for the presence of enzymes in blood that are normally most abundant in liver tissue, metabolites or products. Liver biopsy can be performed to examine liver tissue to distinguish between various conditions; tests such as elastography may reduce the need for biopsy in some situations. By using steroid-based drugs in autoimmune hepatitis.

Chapter 6 : Nonalcoholic fatty liver disease - Diagnosis and treatment - Mayo Clinic

Non alcoholic fatty liver disease (NAFLD) has today been recognized as the most common cause of abnormal liver function among adults in the United States. It is a cause of liver disease to reckon with in the Indian population.

An ultrasound emits high-frequency sound waves that reflect against the targeted surface of the body. When used for examining the liver, a small tool is placed on the skin in the region of the liver. The reflected sound waves create images that are transferred to a computer for closer inspection. The ultrasound can be effective in recognizing changes or abnormalities in the liver, and is a noninvasive diagnostic tool not known to pose any risk to the patient. Ultrasound tests are typically inexpensive and offer a readily available method for liver imaging. The scanner takes very small images of the body in "slices. In some instances, a patient must drink a special edible dye called contrast material to highlight the liver for more detailed images. CT scans are used to assist in diagnosing liver disease. During the test, you will be instructed to lie down on a table that is attached to the scanner. The scanner is large and tunnel-shaped in order to permit your body to pass through. A radiologist will conduct the CT scan and will instruct you to stay very still for the procedure. At this point, the scanner will begin to move and take pictures. A CT scan lasts minutes. The procedure does not cause pain, although some people feel nauseated from drinking the contrast material. If you experience any adverse reactions after your CT scan, be sure to speak with the radiologist or your doctor. There are some risks associated with CT scans. It is always important to speak with your doctor about possible risks or about any concerns you may have. A CT scan can interfere with certain medical devices or interact with certain medications. Prior to a CT scan, talk with your doctor about any medications that you are taking or have recently taken. Women who are pregnant are typically advised not to undergo CT scans. Because a CT scan uses X-rays, your body will be exposed to some amount of radiation. If you have concerns about radiation exposure, please discuss them with your doctor. Initial results from your CT scan may be available to you immediately following the procedure. Often, though, it takes a couple of days to receive a complete assessment of the results. The radio waves are absorbed inside the body and translated as images. MRI produces no radiation. In the procedure, individual images referred to as "slices" are created and stored on a computer. These slices are small and numerous, creating a highly detailed picture of the liver or other organs and tissues. During the procedure, you will be instructed to lie on a table that passes through a tunnel-shaped machine: For accuracy, it is important to stay very still while the scanner is recording images. In some cases, an injection of contrast dye is administered prior to the MRI. MRI is widely used and involves fewer risks than tests such as X-rays and invasive biopsy procedures. MRCP is a specialized MRI that creates images of the liver, gallbladder, bile ducts, and pancreas to evaluate them for damage, disease, and infection. MRCP is a non-invasive procedure, and is very useful for diagnosing liver disease. Liver Scan or Liver-Spleen Scan A liver scan is an imaging technique that is used to assess liver function, diagnose liver conditions, and monitor the effectiveness of treatment. For the test, a very small amount of radioactive fluid radiopharmaceutical is injected into a vein. Once the radiopharmaceutical has circulated through the bloodstream and reached the liver, a large scanner can interpret the fluid as an image. Doctors observe this image to reach a diagnosis of conditions such as cirrhosis, hepatitis, cancer, abscesses, liver enlargement, and portal hypertension. The very small amount of radiopharmaceutical material is injected through an IV in the arm. It is considered safe and does not pose a threat of radioactivity. Some individuals experience discomfort resulting from the radiopharmaceutical. In rare cases, individuals especially those with latex or contrast dye allergies may experience allergic symptoms from the radiopharmaceutical. If you have an allergy to latex or contrast dye, please notify your doctor. Pregnant or nursing women should not have a liver scan. Speak with your doctor if you are pregnant, believe that you may be pregnant, or are nursing. Prior to the procedure, a doctor answers any questions you may have. Fasting and sedation are not usually necessary for the liver scan procedure. A gown is provided, and all jewelry and clothing must be removed prior to receiving the liver scan. A medical professional inserts the IV to administer the radiopharmaceutical. You must lie still on a table so that the liver scan can create accurate images. For hours after a liver scan, it is important to drink a lot of water; this helps

flush any remaining radiopharmaceutical from the body. Patients should feel ready to resume normal activity after the liver scan. Doctors may provide different after-care instructions based on your specific needs. Be sure to follow the instructions provided by your doctor. It is a simple, non-invasive procedure that produces immediate results. X-rays emit low-level radiation that is generally regarded as safe for most people. Many experts believe that the benefits of X-ray imaging outweigh the potential risks for radiation exposure. Pregnant women should not undergo X-ray testing. Speak with your doctor about other options if you are pregnant or think you may be pregnant. The X-ray procedure requires you to lie on a special X-ray reactive table. You should remove all jewelry prior to the procedure. If you have an IUD, tell your doctor prior to the procedure. The X-ray machine will be positioned over the abdomen. For clear pictures free of motion blur, you must momentarily hold your breath while the image is recorded. Prior to X-ray, talk with your doctor about any medications you have taken within the past 7 days. Prior to the procedure, notify your doctor of any recent X-ray procedures you may have had. ERCP Endoscopic retrograde cholangiopancreatography ERCP is a diagnostic imaging procedure involving a lighted camera placed in the body to diagnose or monitor liver, gallbladder, and bile duct problems. While the patient is sedated, the ERCP tube with a very small camera attached is guided down the throat to the stomach and small intestine. The ERCP displays images on a video monitor. Doctors sometimes insert a special dye contrast material to highlight passageways and targeted areas. ERCP can locate and remove gallstones.

Chapter 7 : Diagnosis of Cirrhosis | NIDDK

Imaging characteristics of cirrhosis include a nodular hepatic contour, widened fissures, an enlarged caudate lobe, ascites, varices, and splenomegaly. 3 US is excellent for surveillance for hepatocellular carcinoma (HCC) in patients with chronic liver disease.

Print Diagnosis Because nonalcoholic fatty liver disease causes no symptoms in most cases, it frequently comes to medical attention when tests done for other reasons point to a liver problem. This can happen if your liver looks unusual on ultrasound or if you have an abnormal liver enzyme test. Tests done to pinpoint the diagnosis and determine disease severity include: Blood tests Liver enzyme and liver function tests Tests for chronic viral hepatitis hepatitis A, hepatitis C and others Celiac disease screening test Hemoglobin A1C, which shows how stable your blood sugar is Lipid profile, which measures blood fats, such as cholesterol and triglycerides Imaging procedures Imaging procedures used to diagnose nonalcoholic fatty liver disease include: Plain ultrasound, which is often the initial test when liver disease is suspected. These techniques lack the ability to distinguish nonalcoholic steatohepatitis from nonalcoholic fatty liver disease, but still may be used. Transient elastography, an enhanced form of ultrasound that measures the stiffness of your liver. Liver stiffness indicates fibrosis or scarring. Magnetic resonance elastography, which combines magnetic resonance imaging with patterns formed by sound waves bouncing off the liver to create a visual map showing gradients of stiffness throughout the liver reflecting fibrosis or scarring. Liver tissue examination If other tests are inconclusive, your doctor may recommend a procedure to remove a sample of tissue from your liver liver biopsy. The tissue sample is examined in a laboratory to look for signs of inflammation and scarring. A liver biopsy may be painful in some patients, and it does have small risks that your doctor will review with you in detail. This procedure is performed by a needle insertion through the abdominal wall and into the liver. A Mayo Clinic radiologist views an image obtained via magnetic resonance elastography MRE of the liver, showing areas of scarring fibrosis in red. Treatment The first line of treatment is usually weight loss through a combination of a healthy diet and exercise. Losing weight addresses the conditions that contribute to nonalcoholic fatty liver disease. Ideally, a loss of 10 percent of body weight is desirable, but improvement in risk factors can become apparent if you lose even three to five percent of your starting weight. Weight-loss surgery is also an option for those who need to lose a great deal of weight. Your doctor may recommend that you receive vaccinations against hepatitis A and hepatitis B to help protect you from viruses that may cause further liver damage. For those who have cirrhosis due to nonalcoholic steatohepatitis, liver transplantation may be an option. Outcomes of liver transplant in this population group are generally very good. Potential future treatments No FDA-approved drug treatment exists for nonalcoholic fatty liver disease, but a few drugs are being studied with promising results. Request an Appointment at Mayo Clinic Clinical trials Explore Mayo Clinic studies testing new treatments, interventions and tests as a means to prevent, detect, treat or manage this disease. Calorie reduction is the key to losing weight and managing this disease. If you have tried to lose weight in the past and have been unsuccessful, ask your doctor for help. Choose a healthy diet. Exercise and be more active. Aim for at least 30 minutes of exercise most days of the week. Take your medications as directed and closely monitor your blood sugar. A healthy plant-based diet, exercise and medications can help keep your cholesterol and your triglycerides at healthy levels. Avoid things that will put extra stress on your liver. Follow the instructions on all medications and over-the-counter drugs. Check with your doctor before using any herbal remedies, as not all herbal products are safe. Alternative medicine No alternative medicine treatments are proved to cure nonalcoholic fatty liver disease. But researchers are studying whether some natural compounds could be helpful, such as: In theory, vitamin E and other vitamins called antioxidants could help protect the liver by reducing or neutralizing the damage caused by inflammation. But more research is needed. Some evidence suggests vitamin E supplements may be helpful for people with liver damage caused by nonalcoholic fatty liver disease. But vitamin E has been linked with increased risk of death and, in men, an increased risk of prostate cancer. In studies of people with nonalcoholic fatty liver disease, those who reported drinking coffee had less liver damage than those who drank little or no coffee. If you already drink coffee,

these results may make you feel better about your morning cup of coffee. Discuss the potential benefits of coffee with your doctor. Preparing for your appointment Start by making an appointment with your family doctor or a general practitioner if you have signs and symptoms that worry you. If your doctor suspects you may have a liver problem, such as nonalcoholic fatty liver disease, you may be referred to a doctor who specializes in the liver hepatologist. What you can do Be aware of any pre-appointment restrictions. Take a family member or friend along. Sometimes it can be difficult to absorb all the information provided during an appointment. Someone who accompanies you may remember something that you missed or forgot. Write down questions to ask your doctor. If you find out you have nonalcoholic fatty liver disease, some basic questions to ask include: Is the fat in my liver hurting my health? Will my fatty liver disease progress to a more serious form? What are my treatment options? What can I do to keep my liver healthy? I have other health conditions. How can I best manage them together? Should I see a specialist? Will my insurance cover it? Are there any brochures or other printed material that I can take with me? What websites do you recommend? Should I plan for a follow-up visit? What to expect from your doctor Your doctor is likely to ask you a number of questions, such as: Have you experienced any symptoms, such as yellowing of the eyes or skin and pain or swelling in your abdomen? If you had tests done at that time, what were the results? Do you drink alcohol? What medications do you take, including over-the-counter drugs and supplements? Have you ever been told that you have hepatitis? Do other people in your family have liver disease?

Chapter 8 : PET Imaging + Chronic Liver Diseases – Martin Imaging

Hepatic imaging is usually undertaken to search for primary or metastatic liver disease. CT is the initial diagnostic test for most indications due to its versatility, availability, high sensitivity and specificity, and the fact that it surveys the entire abdomen for potential metastatic disease in the lymph nodes and peritoneum.

Chapter 9 : Fatty Liver | Liver Fibrosis - Diagnosis and Treatment

Imaging biomarkers obtained with diffusion and perfusion - hepatocyte transport imaging, as well as with elastography, have an increasing role in the detection and characterization of diffuse liver diseases and liver tumors, and in the assessment of response to treatment.