Lung Biopsy for Interstitial Lung Disease

Pulmonary Fibrosis Foundation™

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What is a lung biopsy?

Sometimes during the process of evaluating interstitial lung disease (ILD), a thorough clinical evaluation and a special type of X-ray called a high-resolution CT (HRCT) scan can lead to a confident diagnosis. Other times, however, solving the diagnostic puzzle requires additional information in the form of a lung biopsy. A lung biopsy refers to the process by which tissue from the lungs is obtained and tested to help make a diagnosis.

How do I know if I need a lung biopsy?

A lung biopsy may be considered to help diagnose ILD after a thorough clinical evaluation by a lung doctor (known as a pulmonologist), including a history, physical examination, lung function testing, lab work, and an HRCT. After reviewing all of this information, your doctor may find that the results are not conclusive and recommend a lung biopsy be performed to examine your lung tissue.

Which kind of lung biopsy should I have?

If your doctor recommends a biopsy procedure, they will determine what type of biopsy you should have. They will consider the kinds of information provided by the different types of biopsy procedures and the risks associated with each procedure. Lung biopsies are performed either during a bronchoscopy procedure or through a surgical lung biopsy procedure. Further, there are different types of biopsies that can be performed during bronchoscopies. We explain the different types of lung biopsy below.

What is a bronchoscopy?

During a bronchoscopy, a fiberoptic camera, called a bronchoscope, is passed through the nose or mouth to inspect the inside of airways (bronchial tubes) of the lungs. Biopsies of the lungs can be obtained through the bronchoscope. Other tests may also be done on biopsy specimens obtained during bronchoscopy, such as cultures to look for infections and pathology to look for tissue abnormalities associated with ILD. Risks specific to bronchoscopy include bleeding of the airways, lung collapse known as pneumothorax, and adverse reactions to anesthesia. Prior to the procedure, your doctor will make sure that the benefits of performing the test outweigh the risks.

What is a transbronchial biopsy?
A transbronchial biopsy is performed during a bronchoscopy procedure to collect tiny pieces of lung tissue using a small forceps tool. Transbronchial biopsy specimens are typically 2-3mm in size (about the size of the tip of a pen), and usually several biopsies are taken during the same procedure. The biopsy samples are then examined under a microscope by a pathologist. Tissue samples obtained by transbronchial biopsy are often too small for the pathologist to see features needed to differentiate between types of ILDs. For this reason, your pulmonologist may recommend a different type of lung biopsy or you may need additional testing if the transbronchial biopsy results are not conclusive. Most pulmonologists are able to perform transbronchial biopsies during a bronchoscopy procedure, so you do not usually need to go to a specialized center for a transbronchial biopsy.

What is a transbronchial cryobiopsy?
Transbronchial cryobiopsy is another type of lung biopsy performed during a bronchoscopy. In this procedure, a small tool called a cryoprobe is used to freeze a small area of lung tissue and then extract it from the lung. Lung biopsy specimens obtained this way are much larger than transbronchial biopsy specimens, usually 10-15mm (about the size of a pea), and are often better at detecting pathologic features associated with ILD. Transbronchial cryobiopsy is only performed at specialized centers by specially-trained pulmonologists.

What is the Envisia Genomic Classifier?
The Envisia Genomic Classifier (GC) is a molecular laboratory test performed on either a transbronchial biopsy or cryobiopsy sample taken during a bronchoscopy that is used in the diagnostic evaluation of ILD. In patients with suspected idiopathic pulmonary fibrosis (IPF), it is able to detect a usual interstitial pneumonia (UIP) molecular pattern that correlates with UIP in tissue obtained by surgical lung biopsy. Identifying a UIP pattern using this test may help patients avoid an invasive surgical diagnostic procedure.

Envisia GC results are reported as either "positive for UIP" or "negative for UIP". Your doctor may use a "positive for UIP" result along with clinical information, HRCT results, and other lab tests to make a diagnosis of IPF. It is important to know that a "negative for UIP" result does not rule out IPF or give additional information about the diagnosis, and that your doctor may recommend additional diagnostic testing.

What is a surgical lung biopsy?

When larger samples of lung tissue are needed, lung biopsy can be performed during a lung surgery procedure. Most surgical lung biopsies now are done with two or three small incisions in the chest and a video camera to guide the procedure, something called a video-assisted thoracoscopic surgery (VATS), rather than a single large chest incision to open the chest. Biopsy specimens obtained during surgery are usually 20-30mm (about the size of a quarter), much larger than those that can be obtained with bronchoscopy. The surgery is performed in an operating room under general anesthesia by a thoracic surgeon, a surgeon with specialized training in chest surgeries. Patients typically spend one or more nights in the hospital to recover after surgery and need to have a

drainage tube in their chest for part of that time. There are risks of complications including adverse reactions to anesthesia, bleeding, and damage to the lung that can lead to an acute exacerbation of the underlying ILD. Prior to the procedure, your doctor will make sure that the benefits of performing the test outweigh the risks.

How will my doctor use this information to help me?

It's important to remember that no single test in the evaluation of ILD is diagnostic on its own and must be considered alongside clinical history and HRCT. Your doctor may recommend a lung biopsy as part of the diagnostic process. ILD specialists use a process called multidisciplinary discussion, in which pulmonologists, radiologists, pathologists, and other specialists come together to consider a patient's test results, clinical history, and the other elements of their diagnostic work up to reach a consensus on the diagnosis. An accurate diagnosis helps your doctor determine the best treatment options and care plan for your ILD.

Acknowlegements

The Pulmonary Fibrosis Foundation is thankful to the following for their assistance in writing and reviewing this fact sheet:

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Piedmont Healthcare
Atlanta, Georgia
PFF Senior Medical Advisor, Education and Awareness