

Bronchoscopy

Bronchoscopy is an invasive endoscopic examination method of the bronchial tree, which is used to assess its visual changes, sample collection or medical procedures.

Types of bronchoscopy

- According to the type of device used, we distinguish:
 1. **Rigid bronchoscopy** - examination is performed with a rigid bronchoscope under local or general anesthesia,
 2. **Flexible bronchoscopy** - ***examination is performed with a flexible bronchoscope (fibrobronchoscope)*** under local anesthesia.
- according to the purpose of the examination, we distinguish:

Diagnostic bronchoscopy

Bronchoscopically, changes in the *appearance of the mucous membrane* of the bronchi (coloring, thickening, infiltration, changes in the vascular pattern), changes in the *bronchial lumen* (compression or obstruction - perhaps by a tumor), and detection of a foreign body can be evaluated. For diagnostic purposes, bronchoscopy is also used to collect material for cytological or histological examination (by excision or using a brush). Furthermore, a **puncture of the enlarged lymph nodes", which are located right next to the bronchi, and a transbronchial biopsy of the lung parenchyma** are performed. A special examination method that falls into this category is **bronchoalveolar lavage (BAL)**, when 150-300 ml of physiological solution is applied to the segmental lobe of the lung and then aspirated again.

Therapeutic bronchoscopy

During therapeutic bronchoscopy, a procedure is performed that serves to eliminate a disorder. It is about:

1. **removal of foreign bodies,**
2. **sucks out excess fluid,**
3. **removal of coagulum'** (after bleeding) **or mucous plugs** (formed during inflammation),
4. **stoppage of bleeding** (tamponade with a balloon probe or fibrin),
5. **introduction of stents into the bronchi** or trachea in case of obstruction caused by external pressure (metal or plastic endobronchial prostheses),
6. **local tumor therapy** (mostly palliative - the goal is to open the bronchus and relieve the patient of complications), this includes laser therapy, cryotherapy, induction of necrosis using alcohol, endobronchial [[brachyradiotherapy]] (local application of a radioactive emitter to the tumor site), local application of cytostatics,
7. **bronchial lavage** are lavages of the entire lung followed by aspiration of the used fluid, in total about 10-20 l of physiological solution, in patients with cystic fibrosis.

File:Flexibles Endoscope.jpg
Flexible endoscope

Indications for bronchoscopy

Bronchoscopy is performed at

1. **suspicion of neoplastic disease** (e.g. based on X-ray findings),
2. **hemoptysis**, bleeding into the lungs,
3. **inflammatory lung disease,**
4. **lung abscess,**
5. **obstruction of bronchi** (e.g. mucus plugs, coagulum),
6. **aspiration**, foreign body in bronchus,
7. **get samples (biopsy, BAL),**
8. **cough** lasting more than 3 months, the cause of which has not been explained,
9. **need for therapeutic intervention** (brachytherapy, stent placement, etc.).

Contraindications of bronchoscopy

Bronchoscopy is contraindicated

1. all conditions where the patient has **severe lung function impairment** (one-second capacity below 1500 ml),
2. suspicion of **pneumothorax** or the risk of its occurrence during examination,
3. suspicion of **pulmonary embolism,**
4. in patients with confirmed **pulmonary hypertension** (high risk of bleeding).

Complications of bronchoscopy

Among the most common complications are

1. **bleeding** - probably the most serious, life-threatening complication,
2. **pneumothorax** - threatens during transbronchial biopsy of the lung parenchyma,
3. **damage to the vocal cords** by the device,
4. **mucosa damage** of the respiratory tract,
5. **laryngospasm** - a rare complication.

Links

Related Articles

- Endoscope
- Endoscopy
- Bronchoalveolar lavage

References

- KLENER, Paul. *Internal Medicine*. 3. edition. Prague : Galen, 2006. 1158 pp. ISBN 80-7262-430-X.
- CZECH, Richard. *Intern*. 1. edition. Prague : Triton, 2010. 855 pp. ISBN 978-80-7387-423-0.