

Bronchoalveolar lavage

Bronchoalveolar lavage, or **BAL**, is a diagnostic bronchoscopic examination in which a patient is first **administered and then aspirated 150-300 ml of saline back** into the segmental bronchus. The aim of this examination is to obtain bronchoalveolar fluid (BAT) from the level of segmental bronchi and below (bronchioles, alveoli), the obtained content of which can be further examined - especially cellular and non-cellular components.

Evaluation tests

The content of the obtained bronchoalveolar fluid may be:

1. **Leukocytes** – according to the amount and percentage of individual types of leukocytes we can assess the type and activity of inflammatory disease.
2. **Pathogens**– The examination will be used mainly for **opportunistic infections** in immunocompromised patients (*Pneumocystis carinii*, cytomegalovirus, mycobacteria).
3. Asbestos bodies in asbestosis
4. Crystalline particles in macrophages in silicosis.
5. **Tumor cells**

BAL indication

BAL indicates conditions in which we have a reasonable suspicion of one of the following diseases:

1. **Inflammatory lung diseases** (bronchiolitis, pneumonia), which, despite therapy, last longer than 6 weeks.
2. **interstitial lung processes, pneumoconiosis** (asbestosis silicosis, coal mine pneumoconiosis)/
3. Pulmonary proteinosis
4. Langerhans cell granulomatosis
5. Cancer

Contraindications to BAL

The following conditions are considered absolute contraindications to performance:

1. **the critical condition of the patient**, i.e. a condition in which it is clear that determining the etiology and initiating the correct treatment will not delay death.
2. fresh **myocardial infarction**
3. **Bleeding conditions**, that do not respond to adequate treatment.
4. heavy or newly formed cardiac rhythm.
5. **Severe hypoxia below 6kPa**, which persists despite inhalation of oxygen.

Relative contraindications include bronchial obstruction, bronchial hyperreactivity, unstable angina pectoris a uremia.

Complications

They are the same as for bronchoscopy:

1. **Bleeding** – probably the most serious, life threatening complication.
2. **pneumothorax** – threatens during transbronchial biopsy of the lung parenchyma.
3. **Damage to voice ligaments by the device.**
4. Damage to the mucus membranes of the respiratory tract.
5. laryngospasm – a rare complication.

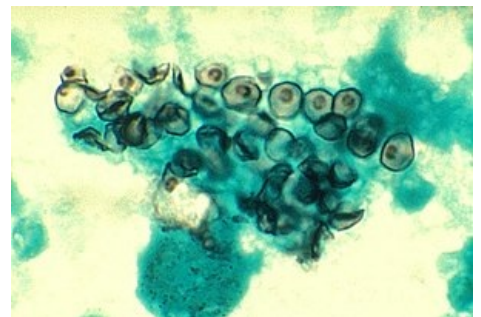
References

Related articles

- Bronchoscopy
- Invasive examination methods



Bronchoscopy before bronchoalveolar lavage



Pneumocystis carinii- finding from bronchoalveolar lavage

References

1. CR. Czech Pneumological and Phthisiological Society. Standard procedure for bronchoalveolar lavage (BAL) and bronchoalveolar fluid (BAT) testing. 2016. Also available from URL < <http://www.pneumologie.cz/guidelines/> >.

References

- KLENER, Pavel, et al. *Internal Medicine*. 3rd edition. Prague: Galén, 2006. 1158 pp. ISBN 80-7262-430-X .
- CR. Czech Pneumological and Phthisiological Society. Standard procedure for performing bronchoalveolar lavage (BAL) and for examination of bronchoalveolar fluid (BAT). 2004. Also available from URL < http://www.pneumologie.cz/odborne/doc/BAL_Standard_Studia_po_recenzi_8_2004.pdf >.