Grodno State Medical University Department of Propaedeutics of Internal Diseases **Sputum Analysis** *Macroscopic investigation* Quantity of sputum – 230 ml The color – grey-green The character – purulent and viscid The odor – present *Microscopic investigation* The leucocytes: neutrophils – 50-60 eosinophils – 0-1 The epithelial cells: flat – 2 ciliary – 5-10 The alveolar macrophages – 20-35 The erythrocytes – 14-25 Curschmann's spirals – absent Charcot-Leyden crystals – absent Elastic fibers – present in big amount Atypical cells – absent Hematoidines crystals – present	Macroscopic investigation: a large quantity (230 ml) of purulent and viscid sputum with bad odor, indicating the presence of bacterial microorganisms. Microscopic investigation: a significant amount of neutrophilic leukocytes (a sign of inflammation), ciliary epithelium, desquamated from the mucous membrane of the bronchial tree (due to inflammation), the presence of alveolar cells (a sign of involvement in the pathological process of lung tissue), elastic fibers (a sign of the necrosis of lung tissue) and red blood cells. We can conclude that it is an ACUTE LUNG ABSCESS.

Grodno State Medical University Department of Propaedeutics of Internal Diseases **Sputum Analysis** *Macroscopic investigation* Quantity of sputum – 180 ml The color – green The character – purulent-mucous and liquid The odor – present *Microscopic investigation* The leucocytes: neutrophils – 40-50 eosinophils – 0-1 The epithelial cells: flat – 1-2 ciliary – 5-7 The alveolar macrophages – absent The erythrocytes – 1-2 Curschmann's spirals – absent Charcot-Leyden crystals – absent Elastic fibers – absent Atypical cells – absent Hematoidines crystals – absent	Macroscopic data: a large quantity (180 ml) of liquid, purulent-mucous and bad-smelling sputum, indicating the presence of bacterial microorganisms. Microscopic data: a significant number of leukocytes (a sign of inflammation), lack of alveolar cells (absence of acute inflammatory process of lung tissue, chronic pathological focus surrounded by capsule and separated from lung tissue), the absence of elastic fibers (no acute necrosis of lung tissue). We can conclude that it is a CHRONIC LUNG ABSCESS.

Grodno State Medical University Department of Propaedeutics of Internal Diseases **Sputum Analysis** *Macroscopic investigation* Quantity of sputum – 190 ml The color – green-yellow with blood-streaks The character – purulent-mucous The odor – present *Microscopic investigation* The leucocytes: neutrophils – 25-30 eosinophils – 0 The epithelial cells: flat – 2 ciliary – 15-17 The alveolar macrophages – absent The erythrocytes – 25-30 Curschmann's spirals – absent Charcot-Leyden crystals – absent Elastic fibers – absent Atypical cells – absent Hematoidines crystals – absent	Macroscopic data: a large quantity (190 ml) of purulent-mucous bad-smelling sputum (sign of bacterial inflammation) streaked with blood (hemoptysis due to weak and inflamed bronchial wall). Microscopic data: a significant number of leukocytes (a sign of inflammation), red blood cells, ciliary epithelium (due to inflammation of the mucous membrane of the bronchial tree), lack of alveolar cells (no involvement in the pathological process of lung tissue), the absence of elastic fibers (no necrosis of lung tissue). We can conclude that this is multiple BRONCHIECTASIS.

Grodno State Medical University Department of Propaedeutics of Internal Diseases **Sputum Analysis** *Macroscopic investigation* Quantity of sputum – 150 ml The color – pinkish The character – serous The odor – absent *Microscopic investigation* The leucocytes: neutrophils – 2-4 eosinophils – 1-2 The epithelial cells: flat – 1-2 ciliary – 0-1 The alveolar macrophages – absent The erythrocytes – 4-5 Curschmann's spirals – absent Charcot-Leyden crystals – absent Elastic fibers – absent Atypical cells – absent Hematoidines crystals – absent	Macroscopic data: 150 ml of liquid serous sputum that indicates transition of liquid part of blood from capillaries to lung tissue (a sign of high pressure in the pulmonary circle). Microscopic data: the normal number of white blood cells (absence of inflammation), the presence of erythrocytes, it is possible to make a conclusion that this is ALVEOLAR EDEMA (due to acute left ventricular failure, acute left atrium failure).

Grodno State Medical University Department of Propaedeutics of Internal Diseases **Sputum Analysis** *Macroscopic investigation* Quantity of sputum – 40 ml The color – rusty red The character– mucous-purulent The odor – absent *Microscopic investigation* The leucocytes: neutrophils – 45-57 eosinophils – 2-4 The epithelial cells: flat – 2 ciliary – 6-8 The alveolar macrophages – 15-20 The erythrocytes – 14-25 Curschmann's spirals – absent Charcot-Leyden crystals – absent Elastic fibers – absent Atypical cells – absent Hematoidines crystals – absent	Macroscopic data: rusty red color of the sputum indicating the presence of modified blood in the sputum. Microscopic data: significant number of leukocytes (a sign of inflammation), red blood cells, alveolar cells (a sign of involvement in the pathological process of lung tissue). We can conclude that this is II STAGE OF LOBAR PNEUMONIA.

Grodno State Medical University Department of Propaedeutics of Internal Diseases **Sputum Analysis** *Macroscopic investigation* Quantity of sputum – 25 ml The color – yellow The character – mucous-purulent The odor – absent *Microscopic investigation* The leucocytes: neutrophils – 25-30 eosinophils – 1-3 The epithelial cells: flat – 2-3 ciliary – 15-25 The alveolar macrophages – 3-5 The erythrocytes – 1-2 Curschmann's spirals – absent Charcot-Leyden crystals – absent Elastic fibers – absent Atypical cells – absent Hematoidines crystals – absent	Macroscopic data: small amounts of mucous-purulent yellow sputum indicates the presence of bacterial microorganisms. Microscopic data: significant number of leukocytes (a sign of inflammation), ciliary cells, desquamated from the mucous membrane of the bronchial tree (due to inflammation), alveolar cells (a sign of involvement in the pathological process of lung tissue). We can conclude that this is PNEUMONIA.

Grodno State Medical University Department of Propaedeutics of Internal Diseases **Sputum Analysis** *Macroscopic investigation* Quantity of sputum – 15 ml The color – pearly The character – mucous and viscid The odor – absent *Microscopic investigation* The leucocytes: neutrophils – 1-4 eosinophils – 10-15 The epithelial cells: flat – 2 ciliary – 5-10 The alveolar macrophages – absent The erythrocytes – 1-2 Curschmann's spirals – present Charcot-Leyden crystals – present Elastic fibers – absent Atypical cells – absent Hematoidines crystals – absent	Given data: small amounts of viscous, mucous sputum, in which microscopically are defined Churchmann's spirals, Charcot-Leyden crystals, mainly eosinophilic white blood cells (a sign of allergies) and ciliary epithelium, desquamated from the mucous membrane of the bronchial tree (due to non bacterial inflammation), it is possible to make a conclusion that this is BRONCHIAL ASTHMA.

Grodno State Medical University Department of Propaedeutics of Internal Diseases **Sputum Analysis** *Macroscopic investigation* Quantity of sputum – 35 ml The color – yellow The character – mucous-purulent The odor – present *Microscopic investigation* The leucocytes: neutrophils – 25-30 eosinophils – 1-3 The epithelial cells: flat – 2-3 ciliary – 15-25 The alveolar macrophages – absent The erythrocytes – absent Curschmann's spirals – absent Charcot-Leyden crystals – absent Elastic fibers – absent Atypical cells – absent Hematoidines crystals – absent	Macroscopic data: small quantity of mucous-purulent sputum with an unpleasant odor, which indicates the continued presence of bacteria. Microscopic data: significant number of leukocytes (a sign of inflammation), ciliary epithelium, desquamated from the mucous membrane of the bronchial tree (due to inflammation), lack of alveolar cells (no involvement in the pathological process of lung tissue). We can conclude that this is a CHRONIC BRONCHITIS.

Grodno State Medical University Department of Propaedeutics of Internal Diseases **Sputum Analysis** *Macroscopic investigation* Quantity of sputum – 70 ml The color – brown The character of sputum – purulent-mucous The odor – present *Microscopic investigation* The leucocytes: neutrophils – 35-50 eosinophils – 2-6 The epithelial cells: flat – 2-3 ciliary – 15-25 The alveolar macrophages – 20-30 The erythrocytes – 15-20 Curschmann's spirals – absent Charcot-Leyden crystals – absent Elastic fibers – present Atypical cells – present Hematoidines crystals – present	Macroscopic data: brown purulent-mucous sputum, due to the presence of bacterial microorganisms and hemoptysis. Microscopic data: elastic fibers (a sign of the necrosis of lung tissue), leukocytes (a sign of inflammation), red blood cells, ciliary epithelium, desquamated from the mucous membrane of the bronchial tree (due to inflammation), the presence of atypical cells (characteristic of the tumor process). We can conclude that this is the NEOPLASTIC PROCESS of the lungs (cancer).

Grodno State Medical University Department of Propaedeutics of Internal Diseases **Sputum Analysis** *Macroscopic investigation* Quantity of sputum – 25 ml The color – white The character of sputum – mucous The odor – absent *Microscopic investigation* The leucocytes: neutrophils – 10-12 eosinophils – 2-4 The epithelial cells: flat – 2 ciliary – 20-25 The alveolar macrophages – absent The erythrocytes – 1-2 Curschmann's spirals – absent Charcot-Leyden crystals – absent Elastic fibers – absent Atypical cells – absent Hematoidines crystals – absent	Macroscopic data: white mucous odorless sputum (no evidence of bacterial inflammation). Microscopic data: significant number of leukocytes (a sign of inflammation), ciliary epithelium, desquamated from the mucous membrane of the bronchial tree (due to inflammation), lack of alveolar cells (no involvement in the pathological process of lung tissue). We can conclude that this is an ACUTE BRONCHITIS.