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# PREVALENCE AND ANALYSIS OF PNEUMOPATHIES IN **SWINE POPULATIONS**

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Abstract: The study was conducted over a one year period, from February 2024 to February 2025, by examining and performing necropsies on 112 swine carcasses, aged 3 weeks to 3 months, from two farms in Timis County. The aim was to assess the prevalence of pneumopathies in swine of different ages and to establish the disease diagnosis and cause of death. Out of the 112 swine necropsied, 60 cases were diagnosed with pneumopathies (53.57%)

Macroscopic and microscopic examination of the swine necropsied revealed inflammatory pneumopathies (50 cases) and circulatory pneumopathies (10 cases).

. The 50 cases of inflammatory pneumopathies, which represent 83.33% of the pneumopathies cases, included exudative forms (catarrhal, fibrinous, fibrino-hemorrhagic, hemorrhagic-necrotic), the productive form (lymphohistiocytic), and the alterative form (necrotic)

#### Introduction ۲

Respiratory diseases in swine represent a major concern in veterinary medicine, exerting a substantial impact on the economic performance of commercial farming operations.

Impairment of respiratory function induces morphophysiological disturbances, as well as dysfunctions in other organ systems, particularly the cardiovascular and nervous systems. Therefore, the primary objective of the present study is to document the macroscopic and microscopic pulmonary lesions observed in swine cadavers.

These respiratory pathologies may be triggered by a diverse array of pathogenic agents, including bacteria, viruses, and parasites, and often result in marked reductions in productive performance due to weight loss and premature mortality. Among the most prevalent pulmonary disorders in swine are exudative and fibrinous bronchopneumonias, which are frequently exacerbated by secondary bacterial infections. Notable bacterial pathogens involved include Actinobacillus pleuropneumoniae, Streptococcus suis, and Mycoplasma hyopneumoniae

#### Material and method ۲

The study was conducted over a 12-month period, from February 2024 to February 2025, and aimed to investigate respiratory diseases in pigs. For this purpose, 112 pig carcasses, aged between 3 weeks and 3 months, from two commercial farms located in Timiş County, were examined post-mortem. Necropsies were performed according to standardized protocols, using the specific swine technique, aiming to identify macroscopic lesions in the respiratory system, as well as their correlation with possible infectious causes or environmental conditions.

After evisceration, a detailed macroscopic examination of the lungs and tracheo-bronchial lymph nodes was performed. The macroscopic examination aimed to record the modified structural features (shape, size, color, appearance, lobulation, consistency and section examination) and to identify the areas of the lungs with lesions in order to take samples (tissue fragments of 2/1.5 cm) for microscopic examinations. Samples were taken from 60 pig cadavers in order to perform the histopathological examination using the paraffin method.

Histopathological preparations were examined using an Olympus CX41 microscope (procured through POS CCE, DICES-MVT 2669-145). Microphotographs were captured to document the most representative histological lesions observed.

# **Conclusions**

- The results confirm that respiratory pneumopathies, particularly bronchopneumonias, represent one of the most frequent causes of mortality and economic loss in pig farms in Romania.
- Out of a total of 112 necropsied swine, 60 cases of pneumopathies were diagnosed (53.57%).
- Both macroscopically and microscopically, in the pigs necropsied during the period February 2024 to February 2025, the following were identified: inflammatory pneumopathies (50 cases) and circulatory pneumopathies (10 cases).

# **Results and discussions**



Swine cadaver, with a state of maintenance ranging from mediocre to good, showing the presence of serosanguineous fluid in the thoracic cavity and fibrin deposits on various serous *membranes – fibrinous polyserositis* 

### Prevalence of pneumopathies



## Prevalence of Pulmonary Diseases in Swine







necropsied pigs.



Graphic representation of the pneumopathies identified in







Necrotic



Inflammatory pulmonary edema: serohemorrhagic exudate in the alveoli and in the bronchias. Col. HEA x20



- Among the inflammatory pneumopathies, the most numerous were exudative bronchopneumonias, followed by productive forms, and finally, alterative forms. Inflammatory pneumopathies, 60 cases 53.57% of the total number of cases and 83.33% of the cases with pneumopathies, are represented by the exudative forms (catarrhal, fibrinous, fibrino-hemorrhagic, hemorrhagic-necrotic), the productive form (lymphohistiocytic) and the alterative form (necrotic). From an anatomopathological point of view, the diagnosed pneumopathies affect all lung structures: pulmonary alveoli, bronchi, trachea, interstitium, blood and lymphatic vessels. No tumoral processes were identified, most likely due to the short economic lifespan of pigs, which prevents tumoral hyperplasia from manifesting morphologically.
- Necropsy diagnosis must always be complemented by histopathological examination and, where possible, by laboratory testing, in order to accurately determine the etiology of the disease.
- The study also shows that the prevention of these conditions must rely on improving farm hygiene, implementing an appropriate vaccination program, and closely monitoring animal health, especially during the transition period from milk to solid feed. Given that more than 60% of the pathology has a viral etiology, it is recommended to strictly observe the rations (knowing that incorrect rations, most often concentrated, hyperglycemic, hyperprotein, vitamin-mineral deficient rations, are favorable factors if not even triggers), the zoohygiene conditions (especially temperature/humidity ventilation) and the performance of antibiotic treatments only when necessary and carried out on the basis of a seeding/antibiogram (most cases being associated with bacterial infections of Actinobacillus pleuropneumoniae).
- In addition to strict compliance with hygiene and feeding standards, it is further recommended to carry out sanitary-veterinary actions for the prevention and control of infectious diseases, in accordance with the Strategic Program of the National Sanitary Veterinary and Food Safety Authority (ANSVSA) and Order No. 35 of March 30, 2016.



Pulmonary stasis edema : fluid resembling "beaten egg white" expressed upon sectioning.



Catarrhal bronchopneumonia, observed in 11 cases, splenization phase: cherry red foci of lung compaction in the cranial, cardiac lobes and the edge of the

diaphragmatic lobes.

trachea. Col. HEA x 10.

Pulmonary edema of

the lumen of

stasis: the presence of

the alveoli, bronchi and

edema fluid, basophilic, in

Catarrhal Catarrhal bronchopneumonia: desquamation of pneumocytes and their fall into the alveolar lumen. Col. HEA x40.



Fibrino-hemorrhagic pleurobronchopneumoni a: fibrin deposits on the pleural surface and in the lung parenchyma.



Fibrino-hemorrhagic bronchopneumonia: fibrino-hemorrhagic exudate in the bronchi and alveolar lumens. Col. HEA x10.



Lymphohistiocytic bronchopneumonia: perivascular and peribronchial cuff-type lymphohistiocytic hyperplasia. Col. HEA x10.



and conjunctival vascular reaction. Col. HEA x4.



Catarrhal bronchopneumonia, pancreatization phase: peribronchial, perivascular and alveolar septa interstitial lymphocytic hyperplasia; desquamation of the alveolar epithelium and collapse into the lumen.



Hemorrhagic-necrotic bronchopneumonia: necrosis of the pulmonary alveoli infiltrated with hemorrhagic infiltrates. Col. HEA x10.



lymphohistiocytic bronchopneumonia slightly mosaic appearance, with accentuated lobular pattern, with slightly



Hemorrhagic-necrotic

areas of hemorrhagic

inflammation with foci of

bronchopneumonia:

necrosis.





bronchopneumonia, hepatization phase: the consolidated (carnified) appearance of the cranial and middle lobes.

delimited whitish areas lymphohistiocytic and and moist appearance. fibroblastic hyperplasia in the perialveolar and peribronchial regions. Col. HEAx 20