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ABSTRACTS BOOK

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## ABSTRACTS BOOK

Збірник матеріалів Буковинського міжнародного  
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Chakravarthy V., Kryzhak O.

## **THE EFFICIENCY OF EARLY SUPPORTIVE THERAPY AND MONITORING AND MANAGEMENT OF HYPOXEMIC RESPIRATORY FAILURE IN CASES OF COVID-19 IN INDIA**

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Department of Physiology named after Y.D.Kirshenblat  
(scientific advisor - Ph.D. Yasinska O.)

Coronaviruses are a large group of viruses that are characterized by a wide range of pathogenicity and causes a number of diseases with predominant respiratory damage, including severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS), and Coronavirus disease 2019 (Covid-19) caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). Many people with COVID-19 have low oxygen levels, even when they are feeling well. Low oxygen levels can be an early warning sign that people need medical care. Severe Covid-19 is accompanied by hypoxemia due to ventilation-perfusion mismatch, with reduction of blood Oxygen saturation (SpO<sub>2</sub>) <90 %. Patients with hypoxia suffer respiratory distress and the elimination of hypoxemia and ease of breathing is an important component for successful treatment. According to WHO recommendations, supplemental oxygen therapy should be early given to patients with Severe Acute Respiratory Syndrome and respiratory distress, hypoxemia to reach target that is SpO<sub>2</sub> 92%-96% in adults. The early supportive therapy is essential to increase the Oxygen saturation (SpO<sub>2</sub>) . In our research, information about number of cases of Covid-19, mortality and number of cases of early oxygen supportive therapy from different hospitals were analyzed and it concludes that early supportive therapy helps to provide high recovery rates.

The efficiency of early supplemental oxygen therapy and mortality rates have been gathered and analyzed for Covid-19 cases in India.

It was found that the mortality ratio due to Covid-19 and the number of cases of early supportive therapy data from various hospitals differ significantly, which can probably be explained by the difference in providing the necessary equipment for appropriate monitoring and timely use of supportive therapy according to the period of Covid-19, the patient's condition and the level of SpO<sub>2</sub>.

Hence, all areas and hospitals where patients with hypoxemic respiratory failure are cared for should be equipped with pulse oximeters, functioning oxygen systems and oxygen-delivering interfaces (nasal cannula, simple face mask, and mask with reservoir Bag) in order to ensure that patients are appropriate early supportive therapy and monitoring and Management of hypoxemic respiratory failure in case of Covid-19 for decrease mortality ratio and provide high recovery rates.

Chihai V.

## **CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND SARS-COV-2 PNEUMONIA**

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Department of Internal Medicine.Semiology.  
(scientific advisor - Ph.D. Dumitras T.)

The evolution of COVID-19 varies from asymptomatic forms to severe manifestations or even death. The main risk factors identified are male gender, old age, diabetes, cardiovascular disease, obesity. Patients with chronic obstructive pulmonary disease (COPD) are also in the risk group due to impaired lung function and being prone to viral exacerbations.

The aim of the research was to review the scientific international literature on COPD influence in SARS-CoV-2 pneumonia severity. We analyzed relevant publications from the PubMed, Scholar Google, NCBI and Medscape databases by using the following search terms : SARS-CoV-2, COVID-19, pneumonia, COPD. The information was systematized, highlighting the peculiarities of SARS-CoV-2 pneumonia in COPD patients.

COPD was found in 3-8% of patients diagnosed with pneumonia due to SARS-CoV-2. COPD leads to an increased risk of hospitalization and carry an odds ratio of 2.681 for admission to intensive care units, invasive mechanical ventilation and death. The susceptibility to COVID-19 in patients with COPD may be caused by the overexpression of angiotensin- converting enzyme 2-receptor into the bronchial epithelium and lung tissue due to smoking. As in the case of other comorbidities, COPD patients experienced endothelial cell dysfunction and increased coagulation, which was demonstrated by elevated levels of D-dimers during exacerbations. The role of inhaled corticosteroids (ICS) in COVID-19 remains uncertain. The ICS could play a protective role by reducing the expression of angiotensin-converting enzyme 2-receptor and inflammation, but at the same time, they lead to immunosuppression and increased risk of pneumonia. Also, patients with COPD tend to be older and have multiple comorbidities asociated with poorer outcomes.

COPD patients are amongst the worst affected by COVID-19, but it is still uncertain whether COPD itself is associated with a less favorable prognosis, or it is because of older age and important comorbidities often found in these patients.

Fetco-Mereuta D.

**OBESITY AND SARS-COV-2 PNEUMONIA**State University of Medicine and Pharmacy «Nicolae Testemitanu», Chisinau, Moldova  
Department of Internal Medicine  
(scientific advisor - Ph.D. Dumitras T.)

Coronavirus disease 2019 (COVID-19) displays a highly variable severity. The spectrum ranges from asymptomatic cases to respiratory or multiorgan failure. Pneumonia, apparent through dyspnea or the requirement for oxygen therapy or intubation, usually separates severe cases of SARS-CoV-2 from their mild counterparts. Older people and those with comorbidities like hypertension, diabetes, obesity, or heart disease are at higher risk of mortality.

The aim of the research was to review the scientific literature on obesity influence in SARS-CoV-2 pneumonia severity. We carried out a comprehensive electronic search in the PubMed, CrossRef, Medline, NCBI and MedScape databases over the years 2019-2021. The following search terms were used: SARS-CoV-2, COVID-19, pneumonia, obesity. The information was systematized, highlighting the main aspects of SARS-CoV-2 pneumonia in obese subjects.

Obesity has been widely reported to be associated with the progression of COVID-19. Obesity increases the risk of severe COVID-19 forms by 84%. Each increase in body mass index by 1 kg/m<sup>2</sup> is associated with a 12% increase of the risk of severe forms. The possible relationship between the underlying obesity and the severity of COVID-19 has a complex origin. The SARS-CoV-2 spike protein has an increased affinity for human angiotensin-converting enzyme 2 (ACE2) which is highly expressed in adipose tissue. After infecting the host cells, serine proteases mediate the cleavage of the spike and facilitate viral entry into the cells through endosomes. The virus itself causes increased apoptosis of lymphocytes, and the impaired function of lymphocytes results in a fulminant cytokine storm, which is characterized by excessive circulating levels of IL-6, IL-2, IL-7 and TNF $\alpha$ . Adaptive immunity is also disrupted in obesity, with a decrease in anti-inflammatory CD4<sup>+</sup> and CD8<sup>+</sup> cells and an increased percentage of proinflammatory immune cells. The obese subjects had a significantly large amount of ACE2 and were inclined to stock a huge amount of virus, which resulted in an increased viral shedding, immune inactivation and cytokine storm.

Because of a high level of inflammation, obesity is associated with poor outcomes of SARS-CoV-2 pneumonia, disease progression and a higher risk of severe forms.

Jophy M., Yeremenchuk I.

**DETERMINATION OF THE INFLUENCE OF THE INTEGRAL INDEX OF ENDOGENOUS INTOXICATION ON SEPARATE INDICATORS OF PERIPHERAL BLOOD IN PATIENTS WITH TUBERCULOSIS**Bukovinian State Medical University, Chernivtsi, Ukraine  
Department of Phthisiology and Pulmonology  
(scientific advisor - Ph.D. Yeremenchuk I.)

Tuberculosis (TB) refers to interleukin-dependent immunodeficiencies with pronounced changes in the cytokine system. Despite significant progress in achieving TB control, the role of individual cytokines in the formation of resistant forms of TB remains unclear. TB refers to diseases that are accompanied by endogenous intoxication (EI), ie the accumulation in the body of end and intermediate products of metabolism in metabolic disorders due to the inflammatory reaction. Systematic hematological control and correct analysis of the data obtained are essential for assessing the clinical condition of a patient with TB, the dynamics of a specific process and the effectiveness of the proposed anti-tuberculosis and pathogenetic treatment regimens. Integral immunological indicators - intoxication indices - reflect both changes in the immune status and the degree of endogenous intoxication, and is a prognostic criterion for the course of many pathological conditions.

The work is aimed to assess the degree of influence of integral indices of endogenous intoxication (IEI) on certain indices of peripheral blood in patients with multidrug-resistant pulmonary tuberculosis (MDRTB). Clinical, laboratory and statistical research methods were used.

With the help of analysis of variance (the critical value of statistics for 95% confidence will be: 3.92.) It was found that the integral IEI, namely the leukocyte index of intoxication according to V.K. Ostrovsky (LIIO), Krebs index (IK), nuclear endotoxiosis index (NII) and L/ESR ratio have a significant effect on the resulting indicator in patients with MRI. However, it has been proven that LIIO has the greatest effect on segmented neutrophils (95.2%), stab neutrophils (57.3%) and lymphocytes (89.2%). According to the IK, the greatest degree of influence was also recorded on segmented neutrophils (95.1%), stab neutrophils (53.9%) and lymphocytes (88.7%). NIE affects only segmented neutrophils (95.5%) and stab neutrophils (65.3%). The L/ESR ratio to a lesser extent affects leukocytes (37.1%) and ESR (44.4%).

The results of the analysis of variance showed that integrated IEI (in 95% of cases) have a significant effect on the peripheral blood parameters in patients with MDR TB, the determination of which will help to assess the patient's condition and the effectiveness of the intended treatment regimens.

Lupu R., Romaniuc D.

**BRONCHO-OBSTRUCTIVE SYNDROME DURING COVID-19 PANDEMICS**

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Department of Internal Medicine: The discipline of clinical synthesis  
(scientific advisor - M.D. Dumitras T.)

Approximately 100 heterogeneous diseases associated with broncho-obstructive syndrome (BOS) have been attributed to the following phenotypes: infectious-allergic, hemodynamic, endocrine-humoral, chemical, metabolic and neurogenic phenotype. Pulmonary function testing (PFT) and lung auscultation have been declared as potential risk factors for COVID 19 transmission. Altogether this limits an appropriate diagnosis of COPD, bronchial asthma and other diseases with airflow limitation.

We reviewed articles published between April 2020 and January 2021 using the keywords “bronchial obstruction” and “airflow limitation in COVID-19”. Compared to the patients who have had COVID-19 but not COPD, those with COPD had higher rates of fatigue (56.0% vs. 40.2%), dyspnea (66.0% vs. 26.3 %), bacterial or fungal coinfection (20.0% vs. 5.9%), acute respiratory distress syndrome (ARDS) (20.0% vs. 7.3%) and septic shock (14.0% compared to 2.3%). Of note, a recent meta-analysis of 6 studies in a total of 1558 patients, identified COPD as an independent risk factor for progression of SARS-CoV-2 infection. Studies show a 9% prevalence of asthma, although there is no clear identification of precise clinical phenotypes and treatment of included patients. These results suggest that allergic diseases may not be a predisposing or aggravating factor for COVID-19 .

Infectious-allergic phenotype of BOS was the most frequent one and included acute bronchospasm induced by SARS-CoV-2 infection, asthma, COPD and bronchiectasis. BOS was confirmed by the presence of wheezes using electronic stethoscope in 1.8-7.1% and by PFT at the time of hospital discharge in 2.7-7.3%. Innovative technologies as alternatives to laboratory PFT have been proposed. Home measurement of peak expiratory flow (PEF), electronic portable spirometers, airwave oscillometry have been found to be comparable with conventional laboratory spirometry in asthma, COPD and cystic fibrosis. Exhaled nitric oxide measurement can be used to support the diagnosis of asthma characterized by type 2 airway inflammation and the decision to start inhaled corticosteroids .

Physical and instrumental findings of broncho-obstructive syndrome are not common in COVID-19. Electronic stethoscope connected to a cellphone, peak expiratory flow measurement, electronic portable spirometers, airwave oscillometry and exhaled nitric oxide measurement have been proposed as alternatives to traditional lung auscultation and pulmonary function tests.

Marchuk O., Yeremenchuk I.

**THE STATISTICAL STUDY OF ANTIBIOTIC-RESISTANCE OF M. TUBERCULOSIS FROM 2012 TO 2019 IN CHERNIVTSI REGION**

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Department of Phthisiology and Pulmonology  
(scientific advisor - Ph.D. Yeremenchuk I.)

In 2018 an estimated new and relapse tuberculosis (TB) cases occurred in countries and areas of the WHO European Region this represents about 2.6% of the total burden of TB in the world. In 2018, there was an estimated in the WHO European Region among notified bacteriological confirmed pulmonary TB cases, with multidrug- resistance (MDR TB) accounting for 84%. Resistance among never treated cases (new TB cases) indicates primary drug resistance due to the infection with resistant bacilli. An estimated 18% of newly diagnosed patients and 54% of previously treated patients had RR/MDR TB. If all TB patients were tested for drug resistance to rifampicin and isoniazid, resistance would be detected at more than 55% of patients.

Our study was based on establishing the effectiveness of anti-tuberculosis drugs in the fight against tuberculosis, as well as an analysis of changes in the sensitivity of Mycobacterium tuberculosis (MBT) in the line of anti-tuberculosis drugs used now and over the past 8 years.

Sensitivity to streptomycin was found in 2012 in 37% of strains. In the period 2013-2015, there was a tendency to an increase in sensitivity - half of the strains showed sensitivity, but since 2016 there has been an increase in resistance and in recent years (2018-2019). Sensitivity to streptomycin is about 14%. Isoniazid in 2012 had little sensitivity - 80% of the strains were resistant to its action. However, in 2013 the situation changed and already half of the strains became susceptible. For the period 2012-2019 the sensitivity of Mycobacterium tuberculosis strains ranges from 20-37%. The same picture is observed with the use of ethambutol in anti-tuberculosis therapy, the sensitivity is in the range of 17-41%. The peak of the effectiveness of ethambutol was in 2016. The sensitivity of M. tuberculosis strains to Ethionamide, Kanamycin, Ofloxacin, Capreomycin is rather low (1-13%) and this situation persists throughout the study period. The lowest effectiveness of treatment is observed with the use of drugs such as Paraaminosalicylic acid - 0%.

Over the past 8 years, we have noticed a lack of sensitivity of strains to paraaminosalicylic acid, and a very low sensitivity to Ethionamide, Kanamycin, Ofloxacin, Capreomycin.

Ruszel K., Dubel R.

**IMMUNE RELATED HEPATOTOXICITY IN A PATIENT TREATED WITH PD-L1 INHIBITORS - CASE REPORT**Medical University of Lublin, Lublin, Poland  
Department of Pulmunology, Oncology and Allergology  
(scientific advisor - M.D. Chmielewska I.)

Adenocarcinoma of the lung is a type of non-small cell lung cancer (NSCLC). The preferred treatment for this type of a cancer in the early stages is surgical removal of the tumor with the surrounding tissue. In cases where the tumor is inoperable, chemotherapy and immunotherapy become the basic treatment. Lung adenocarcinoma responds well to immunotherapy, but side effects are common, including pneumonia, hepatitis, colitis, diabetes or thyroid diseases. Symptoms can appear at any time during the treatment and even after it has ended. Although they most often occur between 6 and 12 weeks of the treatment.

A 66-year-old patient with diagnosed adenocarcinoma of the left lung (EGFR and ALK negative, PD-L1 TC: 5%) was submitted to the Chair and Department of Pulmunology, Oncology and Allergology in Lublin with metastases to the CNS. The patient was after two stereotaxic radiotherapies and Pemetrexed-Cisplatin chemotherapy when the CT scan showed a noticeable progression - metastases in the liver and adrenal glands. After additional tests and oncological consultation, the patient was qualified for the drug program - atezolizumab in the second line of a treatment. A total of 6 PD-L1 inhibitor (atezolizumab) infusions were administered to the patient. Due to abnormal hepatic tests results (ALT, AST) and ALP, atezolizumab treatment was discontinued with grade 4 of hepatitis as a complication of immunotherapy. After treatment with Encorton the results of the tests were improved and the patient felt well. Now the patient is observed.

The aim of this case is showing that some side effects of the immunotherapy treatment in oncology are a reason to permanent discontinuation of a total group of drugs. Encorton allows a rapid normalization of patient condition and the a regression of side effects.

When immune-related adverse events are suspected, appropriate patient evaluation should be performed to confirm etiology or to rule out other causes. A permanent discontinuation of atezolizumab is required in the setting of Grade 3 and 4 acute extensive liver injury or the appearance of symptoms of liver failure. In addition to discontinuation of the drug, in such a situation intravenous glucocorticotherapy and an appropriate diet based on fresh and healthy food should be used. Severe hepatitis, pneumonia and colitis are contraindications for restarting treatment with atezolizumab and other PD-L1 inhibitors.

Virginia C.

**HEART FAILURE IN SARS-COV-2 PNEUMONIA**State University of Medicine and Pharmacy «Nicolae Testemitanu», Chisinau, Moldova  
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Although SARS-CoV-2 infection predominantly involves the respiratory system, clinical manifestations of the disease can be often expressed by cardiovascular symptoms. The symptoms like cough, dyspnea and fatigue can mimic the new onset of heart failure (HF) or the decompensation of preexisting one and can, in addition, complicate management and prognosis of COVID-19.

In order to get a better understanding of the COVID-19 impact on clinical evolution and management of HF, we made a review of the articles published on this topic from April to December 2020.

The existent data show that cardiac symptoms are present in 17% to 49% of survived patients and in about 52% of the deceased ones. HF is one of the most frequent complications of COVID-19, following acute respiratory distress syndrome and sepsis, and the preexisting HF is an independent predictor of a worse outcome. One of the mechanisms through which COVID-19 patients present worsening of HF symptoms is acute myocardial injury due to endothelial damage, thrombosis, ischemia, infarction or myocardial inflammation. Other mechanisms are acute respiratory failure, new or recurrent arrhythmias, as well as molecular mechanisms, represented by ACE-2 receptors. No data have shown an increased severity of COVID-19 patients who are receiving ACEi/ARB treatment, therefore, in order to prevent cardiovascular decompensation these drugs should not be discontinued. Laboratory values, such as inflammatory markers, procalcitonin and brain natriuretic peptide (BNP), may suggest a diagnosis of COVID-19 pneumonia, or preexisting HF exacerbation.

Patients with heart failure represent a group of risk for COVID-19 infection and have to respect prevention measures. The preexisting heart failure complicates the disease course in infected patients. Elevation of proinflammatory and heart failure biomarkers indicates a negative outcome, being useful for a prognostic evaluation in these patients. Heart failure treatment has to be continued, even in patients with concomitant COVID-19 infection.