

PS-25-007

The first wave of COVID-19 in Slovakia – clinicopathological correlation

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Background & objectives: The onset of the COVID-19 pandemic was exceptionally slow in Slovakia. This fact allowed us to analyse autopsy findings in the vast majority of patients with fatal COVID-19 during the first wave in Slovakia.

Methods: We analysed samples of lungs from 25 out of 28 patients who died from COVID-19 during the 1st wave. The presence of the virus was confirmed by immunohistochemistry using antibodies against nucleoprotein and S1 subunit of the spike protein. We evaluated signs of diffuse alveolar damage, other pathological changes, therapy, laboratory parameters, and comorbidities. The data were statistically analysed.

Results: The average age of the patients was 79, the majority were females (19/25). Everyone had at least one comorbidity. 22/25 presented with dyspnoea. CRP was increased in 19/21 patients. Leukocytosis was present in 14/21 patients, caused by increased neutrophil count. Decreased lymphocytes were present in 8/21 patients. Microthrombosis was found in 9/25 cases. There was a correlation between the neutrophil and leukocyte count, CRP, and long-term immobility. Surprisingly, we did not find any correlation between microthrombosis and anticoagulation therapy, or the level of D-dimer. Oxygen therapy correlated with perivascular inflammatory infiltrate. We found a correlation between hyaline membranes and monocyte count, therapy with antimalarials, and thrombocyte count.

Conclusion: The first wave in Slovakia was very specific. We autopsied 89% of cases of fatal COVID-19 with a detailed description of microscopic findings and clinicopathological correlation. The early introduction of strict anti-epidemic measures resulted in an exceptionally low number of fatalities during the first wave of COVID-19. The anticoagulation therapy showed only limited effect on microthrombosis development.

PS-25-008

Emerging trends in human pulmonary dirofilariasis: a case series from Hungary

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Background & objectives: Human pulmonary dirofilariasis (HPD) is a rare zoonotic infection mainly linked to *Dirofilaria immitis*. Although more prevalent in Mediterranean countries, sporadic cases occur in temperate regions. Radiologically, HPD often presents with nonspecific findings, mimicking pulmonary neoplasms.

Methods: This study reports a 12-year case series from Hungary, emphasizing a rise in incidence. Patient data and clinical presentations were gathered from medical records. Grossing data along with histological slides were. Special stains were employed to rule out other infectious agents, while DNA extraction from lesions facilitated polymerase chain reaction (PCR) analysis to confirm the helminth subtype.

Results: Among the patients studied (males: 3, females: 2), all were of middle age (median: 52 years; range: 37–69 years) and presented with tumour-like lesions primarily in the right lung, necessitating lobectomy or wedge resection. Dry cough and chest pain were the most commonly observed symptoms, with only one patient exhibiting blood eosinophilia. Grossly, the lesions had a median size of 18 mm (range: 6–22 mm) and were predominantly located in subpleural regions. Histological examination consistently revealed a necrotizing granulomatous reaction, characterized by remnants of

helminths. Other potential infectious agents were excluded via specialized staining techniques. PCR analysis definitively confirmed the presence of *Dirofilaria immitis* in each case.

Conclusion: This case series sheds light on HPD as an emerging zoonosis, suggesting a likely increase in its incidence within temperate regions. Therefore, clinicians should maintain a heightened awareness of HPD in the differential diagnosis of pulmonary coin lesions. A thorough pathological examination can reliably establish the diagnosis of HPD, while PCR analysis identifies the helminth subtype.

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Assessment of toll-like receptor 9 expression in immune cells in lung tissue from patients with drug-resistant tuberculosis

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Background & objectives: Ukraine has one of the highest incidences of drug-resistant tuberculosis (DR-TB). This study aims to evaluate the expression of Toll-like receptors (TLRs) in immune cells, which are crucial for both innate and adaptive immunity.

Methods: We examined lung tissue samples from 26 deceased DR-TB patients and 24 non-TB individuals. TLR 9 expression in immune cells was quantified using immunohistochemical methods with anti-CD289 (TLR 9) monoclonal antibodies. Expression intensity was qualitatively rated on a scale of 0 (absent), 1 (weak), 2 (moderate), or 3 (pronounced).

Results: An immunohistochemical study of the lung tissue of non-TB individuals demonstrated pronounced expression of TLR 9 by macrophages (2.72 ± 0.24) and low expression of TLR 9 by lymphoid cells of the lung tissue (1.28 ± 0.12). Conversely, in the tuberculosis lesions of the lung tissue of patients who died from progressive DR-TB, there was a low expression of TLR 9 by the macrophages of tuberculosis foci, lower than TLR 9 by the alveolar macrophages in non-TB areas (0.82 ± 0.12 versus 2.23 ± 0.22 , $p < 0.05$).

Conclusion: The markedly reduced expression of TLR 9 in immune cells within DR-TB lesions suggests cellular exhaustion, potentially contributing to the progression and severity of the disease.

PS-25-010

Modified auramine-rhodamine stain contribution to identify mycobacterium tuberculosis

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Background & objectives: Mycobacterium tuberculosis (MT) infection often causes multiple organ granulomatous disease. Suspicious lesions are often biopsied in order to exclude malignancy. Ziehl-Neelsen (ZN) staining is the histological standard diagnostic tool for MT, although auramine-rhodamine (AR) appears to have better detection ratios.

Methods: We evaluated all biopsies with suspected clinical tuberculosis (combined or not with microbiological testing), from January