

# Histopathological evaluation of post-mortem pulmonary specimens excised from ICU patients with COVID-19: Do we know what we do not know?

**Objective:** Although it has been more than two years with Covid-19 pandemic, numbers of the patients have still been rising to date. Unfortunately, the whole pathophysiology is still unclear<sup>2</sup>. We hereby report a study evaluating the pulmonary histopathology of the disease in patients who had ICU course with unfavorable outcome.

**Methods:** This is a prospective study including patients in the intensive care unit with Covid-19 and chest tube between January and May 2022. We performed post-mortem large wedge resections from lungs of 25 patients who had an ICU course with chest tube due to pneumothorax. All specimens were sent to the pathology department for evaluation. All data regarding demographics, co-morbidities, length of the disease and ICU stay, laboratory results, treatments and past medical history were entered into a prospective database. This study is approved by institutional review board of Marmara University.

**Results:** 25 patients, with a median age of 60, were enrolled into the study. 11 (44%) patients were female, 14 (56%) were male. Although none of the patients were tested for cytomegalovirus seropositivity during their whole admission, 60% of our series had CMV positivity in the histopathological evaluation (Picture-1).

While 11 (78.6%) of male patients were CMV (+), only 4 (36.4%) of female patients had CMV ( $p < 0,05$ ). Moreover, median time from first symptom to death and ICU stays of CMV (+) patients were 26.5 and 40 days respectively, these were 15 and 28 days for the CMV (-) patients. Length of ICU stay was significantly longer in the CMV (+) group ( $p < 0,05$ ). In addition to that, median time for steroid treatment was longer with 34 days in CMV (+) patients compared to CMV (-) patients with 17.5 days ( $p < 0,05$ ). ROC analyses were done for identifying cut-off values. Cut-off values were 32 days for total hospital stay, 23 days for ICU stay and 25 days for time of steroid treatment. Additionally, we detected thrombosis in 13 (52%) patients, organized pneumonia in 14 (56%) patients and coagulation necrosis in 6 (24%) patients which is coherent with existing data.

**Conclusions:** We hereby report, for the first time in the literature, presence of CMV in COVID-19 patients who had been treated in ICU. We should keep in mind that CMV infection or pneumonia could occur and should be tested for in the treatment of patients who especially are male and have long time of ICU stay or steroid treatment.

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