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PB2253 NEUTROPHIL TO LYMPHOCYTE RATIO (NLR) AS A PREDICTOR OF SEVERE COVID-19 ON ADMISSION

Topic: 30. Infections in hematology (incl. supportive care/therapy)

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Background: In December 2019, Wuhan City became the center of a pneumonia epidemic caused by a virus of the Coronaviridae family, SARS-CoV-2, which was later designated by the WHO as COVID-19 (Corona Virus Disease-2019). The clinical spectrum of COVID-19 appears to be very broad, ranging from asymptomatic infection to severe viral pneumonia with respiratory failure and even death. Today, there are more than 4.5 million deaths due to this infection with a worldwide case fatality rate of 6.9% .

Aims: The aims of our work is to identify the predictive factors of a severe evolution of the disease at the admission of the patients

Methods: This is a monocentric cross-sectional procepective cohort study conducted at the polyclinic hospital of the National Social Security Fund of Tangier, Morocco, between July and September 2020. We included all patients hospitalized for management of symptomatic COVID-19 infection with a positive PCR test on oropharyngeal or nasopharyngeal swab. Their epidemiological, clinical, biological and radiological characteristics at admission as well as the therapeutic modality and clinical evolution were collected. The main event of interest was the occurrence of death. The descriptive and analytical analysis was done using the JAMOVI software (version 1.6). We used the t-student, Mann-Whitney, $\chi 2$ (or Fisher exact test) to compare differences between survivors and decedents. To explore factors predictive of death, we used univariate and multivariate logistic regression models

Results:

Our study included 113 patients with a median age of 58 years [46-68], a sex ratio=1.69, 27.4% of patients were diabetic. The main symptoms at admission were fever (63.1%), dyspnea (60.2%) and cough (53.1%). The mortality rate was 12.4%, i.e. 14 patients with a median age of 68 years [57-70.8]. Our study found a significant difference between the patients who died and those who survived in terms of age (p=0.024), obesity (p=0.006), presence of cough (p=0.011) and dyspnea (p=0.001), degree of temperature (p=0.026), heart rate (<0.001) and arterial oxygen saturation level (p<0.001) at admission, white blood cell count (p=0.012), neutrophils (<0.001), lymphocytes(p=0.028), eosinophils(p=0.026), neutrophil to lymphocyte ratio NLR (p<0.001), D-dimer(p=0.011), CRP(p=0.001), procalcitonin (p=0.001), LDH (p<0.001), degree of lung parenchymal involvement (p<0.001), use of corticosteroids (p<0.001), antibiotics (p=0.027) and use of preventive or curative thromboprophylaxis (p=0.003). Given the low number of deaths, we chose to include only the biological parameters at admission in univariate and multivariate analysis. The main biological parameters predictive of a severe form of COVID-19 at admission revealed in our univariate regression analysis were the level of D-dimer (OR: 1; 95% [1-1.001]; p=0.033), the level of CRP (OR: 1.009; 95% [1. 004-1,016]; p=0.001), LDH level (OR :1.004; 95%[1.001-1.019]; p<0.001) and NLR ratio (OR: 1.18; 95%[1.07-1.3]; p<0.001) , including these four parameters in multivariate analysis, we find that LDH level (OR : 1.007;95%[1.002-1.011];p=0.005), and NLR ratio (OR:1.47;95%[1.16-1.87];p=0.001) at admission are predictive of mortality.

Summary/Conclusion: On admission of a patient with COVID19, calculation of the neutrophil to lymphocyte ratio (NLR) is important, a high NLR could be a predictor of a severe disease course to which clinicians should be alerted for better management of the patient.