IgM/IgG antibody changes in asymptomatic and discharged patients with reoccurring positive nucleic acid test (RP) of Novel Coronavirus Disease 2019 (COVID-19)

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Abstract

Background It has been reported that antibody testing could improve diagnostic efficiency of COVID-19 infection. However the IgM/IgG changes in asymptomatic and discharged patients with reoccurring positive RT-PCR test (RP) remained elusive. Methods 111 patients with positive RT-PCR test and 40 suspected patients were enrolled. We evaluated the diagnostic performance of IgM/ IgG antibodies. Furthermore, the IgM/IgG levels with the disease progress in asymptomatic and RP patients were analyzed. Results Of the 111 RT-PCR positive cases, 17 (15.5%), 42(38.2%), 22 (20%) and 30(27.0%) were categorized into severe, common, mild and asymptomatic group respectively. We find sensitivity and specificity for IgM of 63% and 92.5%, for IgG 77.8 and 95 % respectively. Combining the IgM, IgG and CT we find the best overall performance with 95.1 % sensitivity, 75 % specificity. The median IgM and IgG levels were lower in asymptomatic group (IgM0.37, IQR: 0.24-0.78, IgG0.38, IQR: 0.17-1.45) than symptomatic group (IgM1.73, IQR: 0.56-3.74, IgG5.67, IQR: 0.79-18.5) ($P < 0.01$). All asymptomatic cases were not tracked to infect others. Among 15 RP cases, IgM levels of RP group at the time of discharge (IgM2.79, IQR: 95-5.37) and retest (IgM 2.35, IQR: 0.88-8.65) were significantly higher than those of NRP group (IgM on discharge: 0.59, IQR: 0.33-1.22, IgG on retest: 0.92, IQR: 0.51-1.58). Conclusion Persistent low levels of IgM/IgG in asymptomatic patients may be correlated to less possibility of conversion to symptomatic cases as well as low infectivity. An elevated IgM level may have implications for the identification of RP patients before discharge

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