

COVID-19 Lymphocyte Morphology – A Very Sensitive Parameter in Diagnosing COVID-19 from Peripheral Blood Smear

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ABSTRACT

Approximately more than 100 peripheral smears of patients showing atypical lymphocyte morphology, who randomly came to pathology laboratory for complete hemogram, were studied over a period of 1 month in August 2020. The lymphocyte morphology in SARS-2 is very characteristic, unlike other viral infections. Based on this morphology, RT-PCR for COVID-19 was advised, the results for which were positive. Hence, this has proved to be a very sensitive and specific parameter in detecting COVID-19. This is the first paper showing correlation between atypical lymphocytes (Covicytes/Virocytes) with positive RT-PCR.

Keywords: COVID-19, Lymphocyte, RT-PCR, Sensitive, Specific parameter

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INTRODUCTION

Approximately more than 100 peripheral smears of patients showing atypical lymphocyte morphology, who randomly came to pathology laboratory for complete hemogram, were studied over a period of 1 month in August 2020. The lymphocyte morphology in SARS-2^[1,2] is very characteristic, unlike other viral infections. Morphology varied from plasmacytoid lymphocytes, lymphocytes with round, irregular, flower-shaped, indented nucleus, and condensed chromatin and basophilic cytoplasm. Lymphocyte with large irregular shaped nucleus, having abundant cytoplasm, with or without cytoplasmic vacuolation, and with or without azurophilic granules was observed.

RESULTS

Cytoplasmic pod formation was also observed in some lymphocytes [Figure 1]. These findings were seen irrespective of the lymphocyte count.

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Based on this morphology, RT-PCR for COVID-19 was advised. Follow-up was taken of all these patients, which suggested a positive result for COVID-19 on RT-PCR. Sensitivity and specificity of currently available investigations for COVID-19 are variable. There is not a single parameter which is 100% sensitive for this infection. There has been follow-up of only 15 cases after the patients

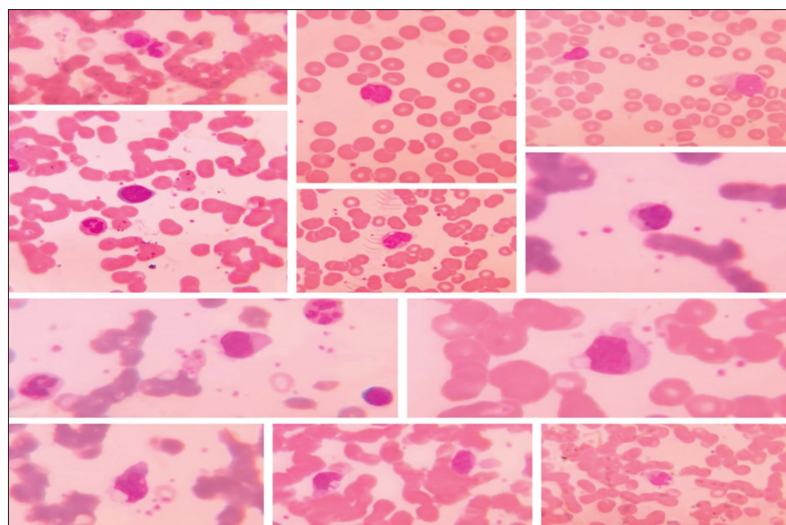


Figure 1: Peripheral smear showing characteristic lymphocytes morphology in COVID-19

became negative on RT-PCR for COVID-19. Peripheral smears of these patients did not show presence of these lymphocytes (Covicyte/Virocytes). According to personal experience, this has proved to be a single laboratory parameter of Covicyte/Virocyte, which is very sensitive and specific in detecting, screening, and diagnosis of COVID-19, especially in India with limited resources and a very large population, it is difficult to carry out RT-PCR on whole population.

CONCLUSION

Peripheral smear examination for Covicytes/Virocytes is very economical, less time consuming, easy sampling for detecting COVID-19 infection even in mildly symptomatic patients. Thus, this single laboratory parameter of Covicyte/Virocyte detection can be

used for screening and diagnosis of COVID-19 patients. This is the first publication showing correlation between Covicytes/Virocytes with positive RT-PCR for COVID-19.

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