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Cytological Analysis of Sputum Specimens Obtained from COVID-19 Patients

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SUMMARY. Severe acute respiratory syndrome (SARS) is a recently described form of atypical pneumonia linked to a novel Coronavirus (SARS-CoV-2). Sputum cytology can help to differentiate SARS-CoV-2 infection from other opportunistic infections. Sputum samples were collected from 100 patients previously diagnosed with COVID-19. Sputum was stained with Papanicolaou's and Diff-Quick's stains for cytomorphological changes. Data were analyzed using the SPSS program. Among 100 patients, 74 (74%) were male, and 26 (26%) were female. The age group between 25-56 years was 76 (76%), while the age group between 57 and older was 24 (24%).The background of smears represents different components with strong evidence of PMNs, mucus spiral and less evidence of RBCs and epithelial cells displayed the cellular changes due to SARS-COV-2virusin squamous and columnar cells. Nuclear enlargement and perinuclear halo were detected in squamous cells whereas columnar cells showed cytolysis and rounding. There was a significant association between staining quality and stain types whereas there was no significant association between cellular changes and age. This study concluded that sputum smears were adequate for the detection of cytopathic effects of SARS-COV-2 infections. Diff-quick's stain showed better quality than Papanicolaou's stain.

RESUMEN. El síndrome respiratorio agudo severo (SARS) es una forma de neumonía atípica recientemente descrita, vinculada a un nuevo coronavirus (SARS-CoV-2). La citología del esputo puede ayudar a diferenciar la infección por SARS-CoV-2 de otras infecciones oportunistas. Se recolectaron muestras de esputo de 100 pacientes previamente diagnosticados con COVID-19. El esputo se tiñó con tinciones de Papanicolaou y Diff-Quick para cambios citomorfológicos. Los datos se analizaron utilizando el programa SPSS. Entre los 100 pacientes, 74 (74%) eran hombres y 26 (26%) eran mujeres. El grupo de edad entre 25 y 56 años fue de 76 (76%), mientras que el grupo de edad entre 57 y más fue de 24 (24%). El fondo de los frotis representa diferentes componentes con fuerte evidencia de PMN, espiral de moco y menor evidencia de glóbulos rojos y células epiteliales que mostraron los cambios celulares debido al virus SARS-CoV-2 en células escamosas y columnares. Se detectó agrandamiento nuclear y halo perinuclear en las células escamosas, mientras que las células columnares mostraron citólisis y redondeamiento. Se observó una asociación significativa entre la calidad de la tinción y el tipo de tinción, mientras que no se encontró una asociación significativa entre los cambios celulares y la edad. Este estudio concluyó que los frotis de esputo fueron adecuados para la detección de los efectos citopáticos de las infecciones por SARS-CoV-2. La tinción de Diff-Quick mostró mejor calidad que la tinción de Papanicolaou.

KEYWORDS: cytology, diff-quick's stain, SARS-COV-2, sputum, Papanicolaou's stain, Sudan

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