Correlation of FeNO Levels with Lung Function in Patients Infected with Coronavirus: A Pilot Study

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Fractional exhaled nitric oxide (FeNO) is an important biomarker of airway inflammation, particularly in asthma. Nitric oxide (NO), a naturally occurring molecule, acts as both a marker and mediator of inflammatory lung diseases. Viral infections affect FeNO levels differently: rhinovirus may increase FeNO, potentially reducing airway hypersensitivity, while respiratory syncytial virus (RSV) lowers FeNO during infection, with levels recovering afterward. SARS-CoV-2 infection (COVID-19), known for its significant lung involvement, may increase FeNO as an anti-inflammatory response. Additionally, type-2 inflammation, linked to higher FeNO levels, may provide some protection against severe COVID-19.

This pilot study examines the relationship between FeNO levels and lung function in 10 non-smoking COVID-19 patients diagnosed via real-time PCR. Spirometry and FeNO measurements were performed upon hospital admission before treatment. Spirometric parameters included Vital Capacity (VC), Forced Vital Capacity (FVC), Forced Expiratory Volume in one second (FEV_1), and Peak Expiratory Flow (PEF).

FeNO showed moderate correlation with FVC ($R^2 = 0.523$, $p = 0.018$) and strong correlation with FEV_1 ($R^2 = 0.705$, $p = 0.002$). These findings suggest higher FeNO levels are linked to better lung function. Further research is needed to clarify these associations and explore the potential therapeutic benefits of NO in COVID-19 management.