Can N-acetylcysteine be Used as a Preventative and Therapy Drug in COVID-19 Patients?

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Abstract

During the past year and until now, the whole world felt a devastating effect of the pandemic caused by the coronavirus disease 2019 (COVID-19). COVID-19 is activated by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Acute respiratory distress syndrome (ARDS) is the main cause of death in COVID-19 which is triggered by lung inflammation. The factor that is causing this might be redox imbalance due to viral infection. Studies show that COVID-19 patients exhibited lower glutathione levels resulting from increased level of reactive oxygen species (ROS). Antioxidant deficiency resulting in the high levels of ROS may be a major factor in causing serious damage to the lungs. One medication that has the potency to scavenger ROS is a precursor of glutathione is N-acetylcysteine (NAC). Clinical trials in using NAC for influenza, ARDS, and ventilator-acquired pneumonia (VAP) have shown promising results in reducing severity of disease (Poe & Corn, 2020). NAC could increase cellular redox status by replenishing glutathione stores, and thereby decreasing the effects of virally induced oxidative stress (Poe & Corn, 2020). This paper will discuss the antioxidative role of NAC in oxidative stress. The purpose of this project is to research whether COVID-19 patients may benefit from NAC in the prevention and treatment of the disease. This paper will also discuss evidence identified in current literature reviews and nursing implications related to care of COVID-19 patients. This study seeks to educate healthcare providers about the potential benefits of using NAC as both the preventative drug and the treatment of COVID19.