

Editorial

Opium Addiction and Susceptibility to COVID-19 infection

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Editorial

Since the identification of the first case of coronavirus disease 2019 (COVID-19) and the later outbreak of disease, introducing protecting strategies have attracted more attention [1]. Recently, it has been postulated that opium addiction may act as a safeguard against COVID-19 infection. Opium known is the second most commonly abused drug in Middle East region. Based on the United Nations Office of Drugs and Crime (UNODC) report, the number of opioid users is about 35 million worldwide.

Opium or its derivatives increase the inflammatory cytokines and transforming growth factor beta (TGF- β) production, augment platelets and white blood cell count and enhance coagulation risk factors including homocysteine, fibrinogen, prothrombin time and partial thromboplastin time. It has been also reported that serum complement factors and high sensitivity C-reactive protein (hs-CRP) level were 12 fold higher in the addicted subjects compared with non-addicted individuals. Several lines of evidence suggest that opium addiction increases the risk of lung diseases such as respiratory depression, pulmonary tuberculosis and chronic obstructive pulmonary disease.

Furthermore, opium addiction is known as a strong risk factor for various cancers including lung, respiratory, esophagus and larynx cancer.

Considering potential mutagenic or carcinogenic properties, various mechanisms have been suggested for carcinogenicity effects of opium and its derivatives, including DNA alkalization which may result in esophagus, liver and lung cancer, morphological changes and sister chromatid exchange in embryo cells and increasing in DNA damage leading to lung diseases by burning of opium and releas-

ing some aromatic hydrocarbons [2]. In addition, opium inhibits both cellular and humoral immune systems, impairs the immune function and activates angiogenesis and tumor neovascularization. Opium also elevates production of N-nitrosamines, nitric oxide and reactive oxygen species (ROS).

Accumulating data confirmed that opium increases ROS and thereby deleteriously affects antioxidant systems. Opium consumption also leads to oxidative stress and low grade inflammation where activation of ROS signaling in lung may induce cell death and increase susceptibility to pneumonia. It is postulated that high production of ROS and inflammatory markers in opium addiction may further increase the risk of exaggerated cytokine production in response to COVID-19 infection, a condition recognized as cytokine storm [3]. Cytokine storm is a serious life threatening situation which requires intensive care unit (ICU) admission and is a main cause of acute respiratory distress syndrome and multiorgan failure in COVID-19 patients. Saeedi et al. showed that the COVID-19 related mortality rate in opium addicted subjects is higher than of non-addicted individuals and opium addicted COVID-19 patients have higher serum IL-6 as the main components of cytokine storm [4]. In addition, a higher frequency of lung radiological alteration, destructive emphysema, high rates of bronchitis and bronchiolitis, lung fibrosis and peribronchiolar fibrosis which can aggravate pneumonia in COVID-19 patients have been reported in opium addicted subjects [5].

In light of the above considerations, it is possible to assert that opium may aggravate the severity of COVID-19 (Figure 1) and results in the exacerbations of the disease in opium addicted subjects.

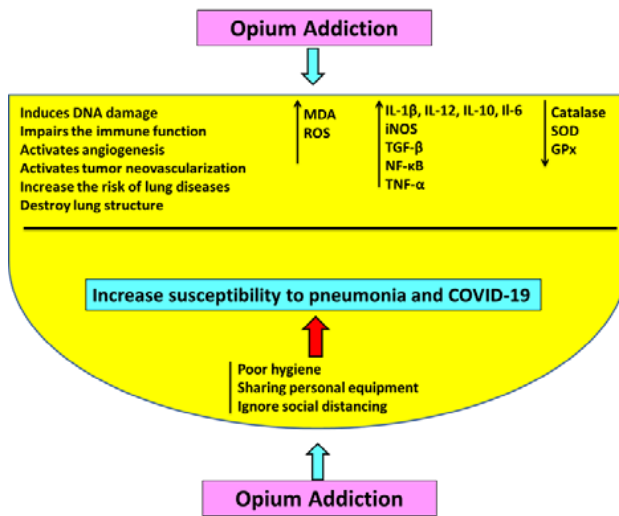


Figure 1: Schematic illustration by which opium addiction elevates the risk of COVID-19 infection. COVID-19: coronavirus disease, GPx: glutathione peroxidase, IL: interleukin, iNOS: inducible nitric oxide synthase, TGF- β : transforming growth factor beta, TNF- α : tumor necrosis factor α , MDA: malondialdehyde, NF- κ B: nuclear factor- κ B, ROS: reactive oxygen species, SOD: superoxide dismutase.

Competing Interest

The authors declare that they have no potential competing interests.

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Availability of Data and Materials

All relevant data are within the manuscript

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