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Short Communication

PIROXICAM-SAVIOUR IN COVID-19

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ABSTRACT

The pandemic of Coronavirus Disease-2019 (COVID-19) still remains a threat. Its treatment led to the repositioning of many drugs. Piroxicam is one of the non-steroidal anti-inflammatory drugs, which inhibits prostaglandin synthesis and has antiviral activity against NRC-03-nhCoV. Lymphopenia is one of the severity indicators in COVID-19. Cytokine storm is responsible for significant morbidity and mortality in COVID-19. Piroxicam has been shown to induce bone marrow Lymphopoiesis and inhibit Tumour necrosis factor alpha (TNF-α), TNF-γ, actively involved in the cytokine storm.

Keywords: COVID-19, Cytokine storm, Piroxicam

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The pandemic of Coronavirus Disease-2019 (COVID-19) still remains a threat. Its treatment led to the repositioning of many drugs. It ranges from antibiotics like azithromycin and Doxycycline to antivirals like Flavipiravir and remdesivir, and anti-helminthic drugs like Ivermectin [1]. Earlier WHO had warned about the use of non-steroidal anti-inflammatory drugs (NSAIDs) in COVID-19; however, the WHO in its modified statement amended the stance for the use of corticosteroids and NSAIDs [2, 3]. Many of these repositioned drugs helped to control the pandemic; however, considering the population and healthcare infrastructure in India, it is certainly difficult to contain and manage the epidemic, endemic diseases, along with COVID-19.

Though many COVID-19 patients do not need admission and oxygen support, the 2nd wave of the COVID-19 pandemic had caused significant morbidity, and India was reaching a daily toll of more than 300 thousand patients each day, with significant mortality pan-India [4]. In the treatment guidelines released by the All India Institute of Medical Sciences, Delhi(AIIMS), plasma therapy, Ramdesivir or Tocilizumab was advised only in specific circumstances, while corticosteroid therapy was recommended along with other supportive care [5]. In the Solidarity trial, also, Ramdesivir had also failed to show any significant effect on overall mortality or duration of hospital stay [6]. WHO guidelines had also recommended the use of corticosteroids and advised against the use of Remdesivir [7].

The pathophysiology of COVID-19 reveals the role of cytokine storm and its subsequent consequences leading to acute respiratory distress syndrome (ARDS) following capillary leakage, hypovolemia, multi-organ failure syndrome and death [8]. Combating the cytokine storm can effectively inhibit the post-cytokine storm consequences. Hence, drugs modulating this storm are of paramount importance in the treatment of COVID-19.

Piroxicam is one of the non-steroidal anti-inflammatory drugs used mainly in inflammatory arthritis [9]. It inhibits prostaglandin synthesis from arachidonic acid by chelating COX-1 (Cyclooxygenase-1) and COX-2. Moreover, it has antiviral activity against NRC-03-nhCoV [10]. It can effectively contain the coronavirus-induced cytokine storm and consequent septicemia. However, the inhibition of the COX pathway leads to excessive activation of the Lipo-oxygenase [LOX] pathway and inhibition of the gastro-protective prostaglandins and may cause gastric mucosal injuries, which can be avoided by concomitant use of Gluco-corticosteroids, which serve as inhibitors of arachidonic acid metabolism, inhibiting both the COX and LOX both pathways.

Cytokine storm is seen in COVID-19 moderate and severe disease, leading to capillary leakage and acute respiratory distress syndrome (ARDS). Inhibition of the COX pathway by Piroxicam prevents further capillary leak and inhibition of replication of novel coronavirus (nhCoV), improving alveolar oxygenation.

Lymphopenia is one of the severity indicators in COVID-19, and Piroxicam has been shown to induce bone marrow lymphopoiesis. Moreover, Tumour necrosis factor alpha (TNF-α), TNF-γ, actively involved in the cytokine storm, are very well inhibited by Piroxicam [11-13] So, Piroxicam, by several mechanisms, can help in combating the cytokine storm and can be used in COVID-19.

ETHICAL CONSIDERATION

Research was carried out according to the Declaration of Helsinki

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AUTHORS CONTRIBUTIONS

All authors have contributed equally

CONFLICT OF INTERESTS

I undersign, certificate that I do not have any financial or personal relationships that might bias the content of this work.

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