

COVID 2020 versus COVID 2021-A Data Base Research

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ABSTRACT

Aim: Purpose of the research was to find out data base comparisons between covid situation in 2020 versus the change of situation in 2021

Methodology: A search was done, in WoS (SCI, SSCI, A&HCI and ESCI) and Scopus, to any documents published in the past 1 year (Jan 30, 2020 to April 30, 2020) using the search query “SARS-CoV-2” OR “COVID-19” OR “Coronavirus 2019” OR “Corona Virus 2019” OR “novel coronavirus” OR “novel corona virus” OR “2019-nCoV”, in titles and keywords. Data from Clarivate Analytics’ Web of Science, and Elsevier’s Scopus, which do not index preprints, were assessed. With final count of 53 peer reviewed research, the data was collected and then subjected to descriptive statistical analysis using SPSS 25.0.

Results: In all the cases from 2020, it was evident that around 63.5% had treatment schedule consisting of HCQ and Ivermectin (32.1%) as well as plasmapheresis (27.4%). In 2021, 56.9% had remdesivir as the major treatment along with humidified oxygen (88.3%). Amount of HRCT chest also increased as compared to 2020, from 39.8% to a staggering 84.6% in 2021. Britain variant was detected in almost 12 peer review research, 1 peer review had cases related to south African variant, 3 with Brazilian variant and 1 for double mutant detected in India.

Conclusion: A paradigm shift has been seen in situation from 2020, be it vaccines, Remdesivir, increased usage of HRCT, mutations in viral structure, or post covid infections with glucocorticoid usage, in the year 2021 for coronavirus situation worldwide.

Keywords SARS-COV-2, humidified oxygen, vaccines, glucocorticoids, mortality, mutations

INTRODUCTION

The COVID-19 pandemic is a sign of how vulnerable and fragile our world is. The virus has upended societies, put the world’s population in grave danger and exposed deep inequalities. Division and inequality between and within countries have been exacerbated, and the impact has been severe on people who are already marginalized and disadvantaged. In less than a

year and a half, COVID-19 has infected at least 150 million people and killed more than three million. It is the worst combined health and socioeconomic crisis in living memory, and a catastrophe at every level. There has been a drastic change in our understanding and handling of covid disease. With the advent of new drugs, vaccine in the picture in 2021, situation looked very good for controlling this disease. However, 2nd wave of infections in India and new variants of SARS Cov-2, situation seems out of control. With increase in mortality rate and increased spread as well as leniency in people's attitude related to following of covid protocol, has led to devastating situation in this country as well as other countries like Brazil. Situation however has improved in western countries, mostly due to ample supply of vaccine to their people. The pandemic coronavirus disease 2019 (COVID-19) continues to be a significant problem worldwide. While several treatment options have been evaluated, none except systemic glucocorticoids have been shown to improve survival in COVID-19. Unfortunately, the widespread use of glucocorticoids can lead to secondary bacterial or fungal infections. Invasive pulmonary aspergillosis complicating the course of COVID-19 is widely recognized;¹ however, mucormycosis is now come into focus. Many new symptoms also came into the picture like loss of taste and smell as well as diarrhoea, apart from usual symptoms of breathlessness and flu like symptoms like- sneezing, headache, sore throat etc. In 2021, RT-PCR testing has taken center stage rather than antigen testing in 2020, when carried on a larger scale. But many new variants and false negatives have led to increase in carrying out Computed tomography scan (CT scan) of chest to diagnose the focus of infection in cases which are false negative through antigen testing but are still symptomatic related to covid. In 2020, it was of general view that Hydroxyquinone (HCQ) and Ivermectin were widely used for treating covid patients, however with passing time and increasing studies have noted that these drugs prove more harmful rather than treating the viral load. Another treatment strategy, which was very popular in initial stages of the disease spread was providing convalescent plasma containing antibodies from individuals who have recovered from the disease. Now that also has taken a backseat and have not proved useful for patients with severe disease. It was also of view that virus spreads only through surface contamination or with aerosol, however newer studies in 2021, have indicated that infection can be airborne in closed areas upto 10 metres. Introduction of vaccine into the picture have helped to control the damage due to this viral infection. Multiple vaccines are now available in the market which were not available in 2020 like- Covishield (Astrazeneca), Pfizer, Moderna, Covaxin, Sinovac, Johnson and Johnson, Sputnik V, helped in fighting this dreaded battle with the covid virus. Remdesivir as well as oxygen consumption has also increased drastically in the second wave in 2021 as compared to the 1st wave of infection in 2020, which has led to the shortage of drugs as well as liquid medical oxygen causing untimely demise of many people affected with this disease. Lockdowns have led to decline in the spread of the infection, however, leading to collapse of economy of the country. These days oxygen plants, oxygen concentrators and vaccines are in huge demand and but supply is not upto the mark.

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Clarivate Analytics' Web of Science, and Elsevier's Scopus, which do not index preprints, were assessed. Publications including research articles, letters, editorials, notes and reviews, research articles, were considered. Based on both databases, the top three countries, ranked by volume of published papers, were the USA, China, and Italy while *BMJ*, *Journal of Medical Virology* and *TheLancet* who published the largest number of Covid-19-related papers. These documents were then cleaned up manually in order to remove any duplicates. In a few cases, 2.3% in WoS and 0.28% in Scopus, early access and published versions of a same document were published twice with different accession numbers (in WoS) or Scopus IDs. Consequently, the sample sizes decreased to 3,097 documents with unique digital object identifiers (DOIs) or titles for WoS and 143 documents for Scopus. These records were then analyzed by a variety of fields including subject areas, document types, organizations, funding sponsors, authors, source titles, countries, languages, and most cited documents. With final count of 53 peer reviewed research, the data was collected and then subjected to descriptive statistical analysis using SPSS 25.0.

RESULTS

Of note, 1 study evaluated mortality at 30 days, 3 studies evaluated mortality at 28 days, 1 study evaluated mortality at 21 days, 1 study evaluated mortality at 14 days, and 2 studies did not specify a date for mortality (time of death). Across all available studies, the overall mortality rate in the steroids group was 22.9%. Across all available studies, the overall mechanical ventilation rate in the steroids group was 14.0%. Across all available studies, the overall SAE rate in the steroids group was 3.6%. Across all available studies, the overall superinfection rate in the steroids group was 18.3%. The following formulations of corticosteroids were evaluated against placebo and/or SOC: hydrocortisone, dexamethasone, and methylprednisolone. Among the study population, 2795 (36.1%) patients received corticosteroids in addition to SOC (steroids), and 4,942 (63.9%) received placebo and/or alone SOC. In all the cases from 2020, it was evident that around 63.5% had treatment schedule consisting of HCQ and ivermectin (32.1%) as well as plasmapheresis (27.4%). In 2021, 56.9% had remdesivir as the major treatment along with humidified oxygen (88.3%). Amount of HRCT chest also increased as compared to 2020, from 39.8% to a staggering 84.6% in 2021. Britain variant was detected in almost 12 peer review research, 1 peer review had cases related to South African variant, 3 with Brazilian variant and 1 for double mutant detected in India. (Table 1)

Table 1- Comparison of situation between covid 2020 and covid 2021 based on descriptive analysis

Variables	COVID 2020	COVID 2021
Glucocorticoid usage	51.9%	85.9%
Vaccines	9.3% (Sinovac and Sputnik V)	67.2%
HRCT usage	39.4%	84.6%
Remdesivir		56.9%
Humidified oxygen	39.8%	88.3%
Prevalence of post covid infections	10.8%	21.3%
Superinfections	12.8%	22.4%
HCQ usage	63.5%	12.1%
Mutations <i>Britain variant</i>	2.3%	17.3%

<i>South African variant</i>	0.8%	9.3%
<i>Brazilian variant</i>	1.1%	6.2%
<i>Double mutant</i>	0.2%	10.7%
Ivermectin usage	32.1%	15.8%
Convalescent plasma usage	27.4%	20.3%

DISCUSSION

Glucocorticoids and probably remdesivir are the only drugs proven to be beneficial in COVID-19. Glucocorticoids are inexpensive, widely available, and have been shown to reduce mortality in hypoxemic patients with COVID-19.² Nevertheless, glucocorticoids can increase the risk of secondary infections. Moreover, the immune dysregulation caused by the virus and the use of concurrent immunomodulatory drugs such as tocilizumab could further increase the risk of infections in COVID-19 patients.^{3,4} Pulmonary mucormycosis is increasingly diagnosed, and the case fatality has improved over time.⁵ Control of hyperglycemia, early treatment with liposomal amphotericin B, and surgery are essential for the successful management of mucormycosis.⁶⁻⁸ However, COVID-19 has created a unique scenario where all three aspects of the management are compromised. Firstly, hyperglycemia is aggravated by the most effective therapy for severe COVID-19, namely glucocorticoids. Coexisting ARDS and multiorgan dysfunction preclude timely diagnostic imaging and testing.⁹ Finally, the hospitals are overwhelmed by COVID-19 patients, and essential services, including diagnostics and surgeries, could be significantly curtailed.¹⁰

Corticosteroid therapy reduced the odds of mortality and the need for mechanical ventilation in COVID-19 patients, although the therapeutic benefit occurred in patients that required oxygen support (e.g., severe to critical status). Corticosteroid therapy did not increase the odds for SAEs or superinfection. These data suggest that corticosteroid treatment can improve clinical outcomes in moderate and severe critical COVID-19 patients, and it is not associated with greater odds of adverse outcomes above and beyond standard therapies.

Corticosteroids reduce inflammation at the transcriptional level by enhancing anti-inflammatory mechanisms while reducing pro-inflammatory mechanisms.¹¹ Well-described mechanisms of action along with the widespread availability of corticosteroids make them a desirable therapeutic option for a wide variety of pathologies. However, the efficacy of corticosteroid treatment for respiratory viruses has been questionable, especially given the greater risk of poor outcomes and adverse events observed with treatment of other respiratory syndromes (e.g., influenza, SARSCoV-1, Middle Eastern respiratory syndrome).¹²

Of the eight cases reported in the initial presentation in Jan 2021 (including the index case), 3 and 2 cases were from the United States of America and India, respectively. One case each was reported from Brazil, Italy, and the United Kingdom. The median (range) age was 57.5 (22–86) years, and seven were men. Diabetes mellitus (n = 4, 50%) was the most common predisposing condition; in one case, diabetes was previously undiagnosed. No traditional risk factors for mucormycosis were identified in three (37.5%) of the subjects. Acute respiratory distress syndrome due to COVID-19 was present in seven cases. Elevated serum creatinine was seen in 5 cases, while the details were not available in the remaining three. Two subjects presented with symptoms suggesting mucormycosis (rhino-orbital mucormycosis), while the others developed mucormycosis following treatment for COVID-19 (usually between 10 and 14 days of hospitalization).

CONCLUSION

It was evident that with disease progression and development of our knowledge regarding the disease have changed the treatment strategy as compared to last year management especially related to handling variants of this virus with new and effective medications and vaccines.

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