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Commentary

High Mortality of COVID-19 Infection in Hip Fractures

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ABSTRACT

Following the recent pandemic caused by a novel virus, SARS-CoV-2 (COVID-19) originating in China we have investigated the effect of COVID-19 virus on the mortality of cases associated with hip fractures. Hip fracture by itself carries a significant mortality risk post injury, which was recorded to be around 7% in the first 30 days. We have presented the first evidence of high (50%) 30-day mortality in fragility hip fractures associated with COVID-19 infection.

Keywords: COVID-19; SARS-CoV-2; Antibacterial therapy

DESCRIPTION

- There was a significant difference of mortality rate in COVID-19 positive group (n=10, 50%) compared to COVID-19 negative group (n=4, 7.3%), with mean time to death of 19.8 days (95% confidence interval: 17.0-22.5 days, p=0.003) [1,2].
- 30% (n=6) contracted the COVID-19 infection in the community and 70% (n=14) developed symptoms after hospital admission.
- The average White Cell Count (WCC) in COVID-19 positive patients was 12.3 × 109 cells/litre compared to 11.2 × 109 cells/litre in COVID-19 negative patients, p=0.02. There was a statistical difference in the average Lymphocytes count between the two groups, with 0.7 × 109 cells/litre in Covid-19 positive group, and 1.1 × 109 cells/litre in Covid-19 negative group, p=0.01. The mean C reactive protein was 46.7 compared to 33.7, p=0.3, in Covid-19 positive and negative cases, respectively.
- 100% (n=20) had shown symptoms of fever and cough. All ten (100%) deceased cases had hypoxia. Seven (35%) cases had radiology lung findings of new pulmonary infiltrates, consistent of viral pneumonitis which resulted in mortality (70% of mortality, p=0.01). All ten (50%) survivals had no features of viral pneumonitis. All of the twenty positive patients had received oxygen supplement and seven (35%) had received antibacterial therapy.

DISCUSSION

The Covid-19 virus causes a two-phase immune response [3]. The second phase, cytokine release syndrome (CRS) causes immune mediated lung damage and/or multi-organ failure, and leads to death. CRS is characterized by leucocytosis associated with lymphopenia. We found in our study that COVID-19 positive patients had significantly higher mean Leukocytes counts and lower mean lymphocytes count compared to COVID-19 negative patients. We have postulated that in hip fractures associated with Covid-19 infection there are three potential hits, trauma, COVID-19 infection and surgery. Hip fracture surgery may act as a "third hit" that boost the hyper immune state caused by COVID-19 virus and this may be a major factor in the increased mortality. Dexamethasone was shown to reduce COVID-19 mortality by suppressing the immune response which supports our theory [4].

Interestingly, we have observed radiological evidence of viral pneumonitis in 35% of patients of COVID-19, which all resulted in death. On the other hand, all Covid-19 positive survivals (10 patients) had normal Chest X rays. This suggests that Chest X ray findings of viral pneumonitis can be an indicator of mortality.

CONCLUSION

Despite relative small sample size, our research gives a platform to explore further outcomes and pathophysiology effects of this intriguing virus. Immunological researches looking to different cytokines profiles can lead to an important discovery of a

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treatment of this virus. Furthermore, it opens the door for further researches looking to the radiological predictors of mortality in COVID-19 infection. Meanwhile, this study gives an insight of the significant effect of this virus infection on the mortality of surgical patients which helps in counseling patients and relatives.

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