

ORIGINAL RESEARCH

AWARENESS OF REMDESIVIR THERAPY AMONG DENTAL STUDENTS

Sethu Raman¹, Ashwini Sukanya²

¹Senior Lecturer, Department of Prosthodontics, SRM Dental College, Kattankulathur, Tamil Nadu-600032

²Senior Lecturer, Department of Prosthodontics, Madha Dental College, Chennai, Tamil Nadu-600069

ABSTRACT

Introduction: While several authorized medicines and research drugs have displayed antiviral effectiveness against the SARS-CoV-2, there are currently no validated antiviral therapies for treating gravely ill patients with COVID-19. No particular antiviral drug has been shown to be successful in treating patients with extreme coronavirus disease 2019. Remdesivir (GS-5734), a nuclear analog drug, has inhibitory activity on pathogenic animals and coronaviruses in humans.

Aim: To evaluate awareness of dental students on remdesivir therapy

Materials & Methods: This was a cross-sectional type of research based on a questionnaire which included 100 dental college students in Chennai. A self-designed questionnaire with ten questions generating knowledge and awareness amongst dental college students about Remdesivir therapy. Questionnaires were distributed via an online database survey world. Questions discussed understanding of Remdesivir treatment, signs, counterindications, action mechanism and side effects. Data were collected and analyzed after the answers were obtained from 100 participants.

Results: 27% were aware about Remdesivir therapy 15% were aware of the mechanism of action of Remdesivir therapy 15% were aware of the indications of Remdesivir therapy. 12% were aware of the contraindications of Remdesivir therapy. 14% were aware of the side effects of Remdesivir therapy.

Conclusion: There was limited awareness among dental students regarding Remdesivir in managing viral infections. Intensified awareness and education programmes must be instituted to disseminate knowledge about Remdesivir therapy.

KEYWORDS

Remdesivir Therapy, Coronavirus, COVID-19

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Address of correspondence

Dr. Sethu Raman
Department of Prosthodontics, SRM Dental College,
Kattankulathur, Tamil Nadu-603203

Introduction

In the pandemic of serious acute respiratory syndrome coronavirus2 (SARS-CoV-2), approximately 15% of infected adults experience extreme pneumonia require extra oxygen care and an estimated 5% progression to critical disease with hypoxaemic respiratory failure and acute respiratory distress syndrome with multi-organ failure demanding ventilation assistance, mostly for severe respiratory failure. Half of the coronavirus disease patients necessitating mechanical ventilation have died in hospitals, and the related burden on healthcare systems, particularly intensive care units, is overwhelming in various affected countries [1-5].

While several licensed drugs and interventional agents have already shown vitro antiviral effectiveness against SARS-CoV-2, there are currently no antiviral treatments with

No precise antiviral medication for treating people with acute coronavirus disease 2019 (COVID-19) has been proved effective. Remdesivir (GS-5734), an analog nucleoside prodrug, has inhibitory activity on moribund human and animal coronavirus, which include severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in vitro, and restricts SARS-CoV-1, and SARS-CoV-2 reproduction in experimental animals. The survey intended to evaluate the dental students awareness of Remdesivir therapy

Materials And Methods

This was a cross-sectional type of research based on a questionnaire which included 100 dental college students in Chennai. A self-designed questionnaire with ten questions generating knowledge and awareness amongst dental college students about Remdesivir therapy. Questionnaires were distributed via an online database survey world. Questions discussed understanding of Remdesivir treatment, signs, counter-indications, action mechanism and side effects. Data were collected and analyzed after the answers were obtained from 100 participants.

Results

27% were aware about Remdesivir therapy (Figure 1). 15% were aware of the mechanism of action of Remdesivir therapy (Figure 2). 15% were aware of the indications of Remdesivir therapy (Figure 3). 12% were aware of the contraindications of Remdesivir therapy (Figure 4). 14% were aware of the side effects of Remdesivir therapy (Figure 5).

Figure1: Awareness of Remdesivir therapy

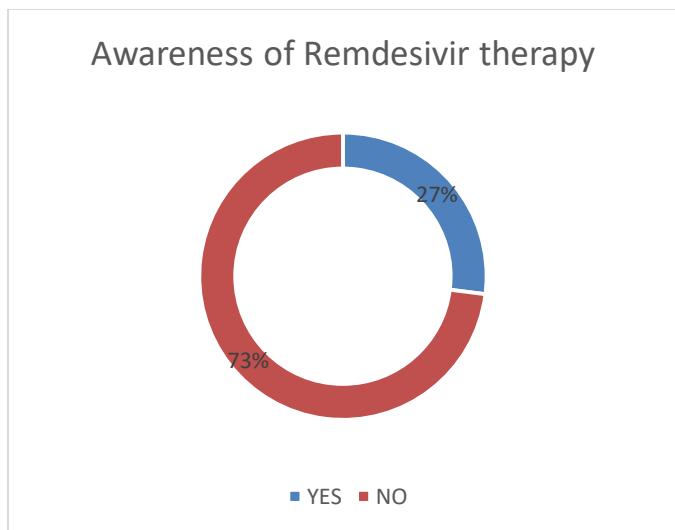


Figure2: Awareness of mechanism of action of Remdesivir therapy

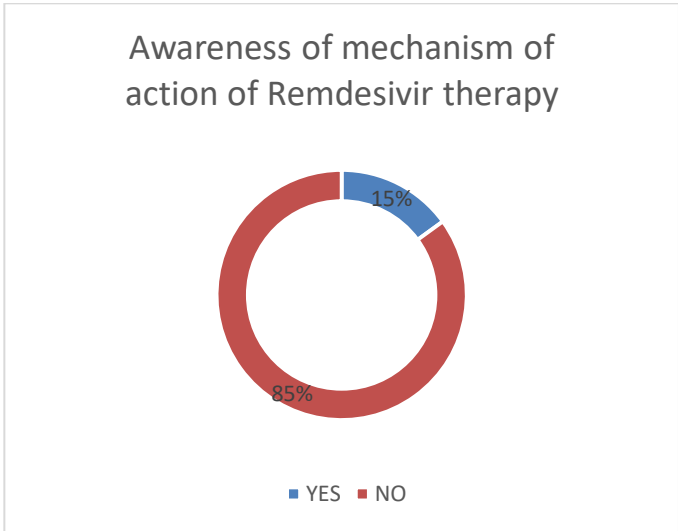


Fig 3: Awareness of indications of Remdesivir therapy

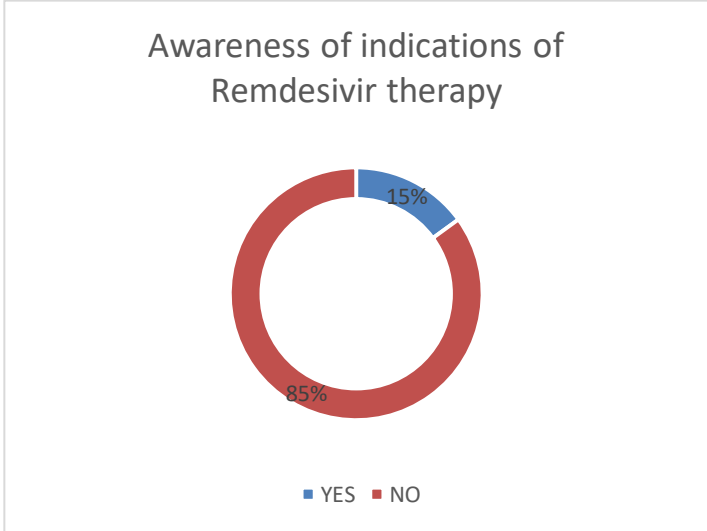


Fig 4: Awareness of contra indications of Remdesivir therapy

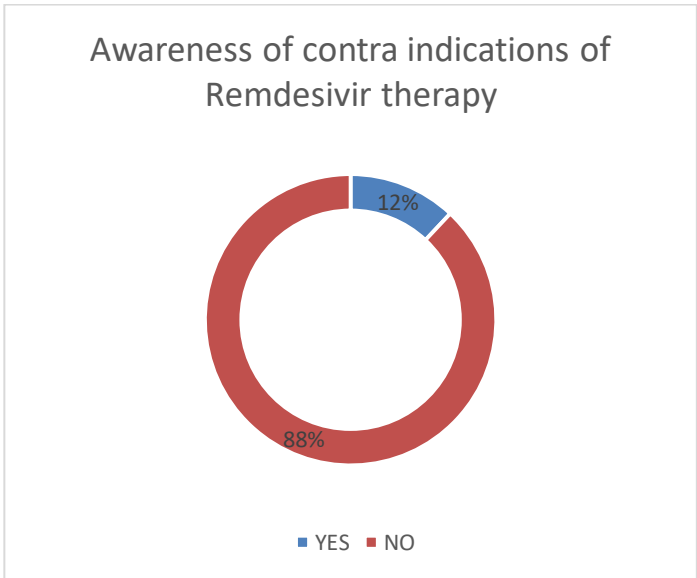
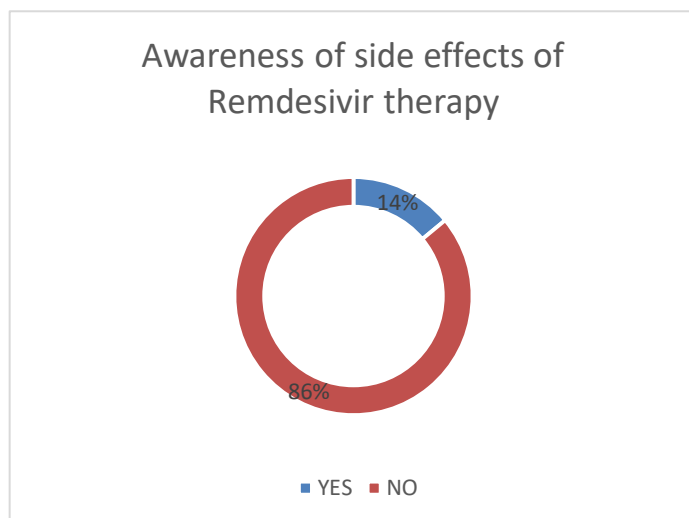


Fig 5: Awareness of side effects of Remdesivir therapy



Discussion

Remdesivir is monophosphoramidate adenosine analog drug with a diverse antiviral range including, pneumoviruses, filoviruses, paramyxoviridae, and coronaviruses^[8,9] In vitro conditions, remdesivir subdue all antecedently tested human as well the animal coronaviruses, including SARS-CoV-2, and shows antiviral and therapeutic impacts in animal model of SARS-CoV-1 and MERS^[10-14]. Remdesivir was superior to a combined interferon beta and lopinavir – ritonavir regimen in a mortal murine model for MERS^[15].

Remdesivir powerfully inhibits SARS-CoV-2 riposte in human pulmonary epithelial cells. Early remdesivir treatment has been shown to have important antiviral and clinical results in rhesus macaque model of SARS-CoV-2. Intravenous remdesivir has been investigated for the treatment of ebola virus, where it was sufficiently tolerated but also less effectual than many monoclonal antibody therapies, been used in some nations in patients with COVID-19 depending on specific considerate use over several months. Case studies in critically ill patients with COVID-19 showed benefit. Nevertheless, the clinical antiviral effectiveness of COVID-19 remdesivir remains to be determined^[15-17].

Constipation, thrombocytopenia, hypoalbuminaemia, anaemia, hypokalaemia, and significantly higher bilirubin have been the nearly prevalent adverse events in remdesivir group; and, in placebo group, the most frequent were hypoalbuminaemia, indigestion, iron deficiency, hypokalaemia, elevated aspartate aminotransferase, exaggerated cholesterol levels, and inflated total bilirubin.

Continuing research with larger sample sizes should enhance understanding of the COVID-19 impact of remdesivir. In addition, strategies for enhancing remdesivir's antiviral potency such as higher-dose regimen, conjunction with the other antiviral, or SARS-CoV-2 nonsubjective antibodies and reducing immunopathological host reaction

that lead to COVID-19 severity require comprehensive study among patients with some extreme COVID-19 rates.

Conclusion

There was limited awareness among dental students regarding Remdesivir in managing viral infections. Intensified awareness and education programmes must be instituted to disseminate knowledge about Remdesivir therapy.

Author Contribution

Sethu R: Manuscript editing, Literature search, data collection

Ashwini S: Data Analysis, manuscript drafting

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Conflict of Interest- None

Source of Funding- None

References

- [1]. Wu Z, McGoogan JM. Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: summary of a report of 72 314 cases from the Chinese Center for Disease Control and Prevention. *Jama*. 2020 Apr 7;323(13):1239-42.
- [2]. Chen N, Zhou M, Dong X, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *Lancet* 2020; 395: 507–13.
- [3]. Zhou F, Yu T, Du R, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *Lancet* 2020; 395: 1054–62.
- [4]. Bhatraju PK, Ghassemieh BJ, Nichols M, Kim R, Jerome KR, Nalla AK, Greninger AL, Pipavath S, Wurfel MM, Evans L, Kritek PA. Covid-19 in critically ill patients in the Seattle region—case series. *New England Journal of Medicine*. 2020 Mar 30.
- [5]. Wang M, Cao R, Zhang L, et al. Remdesivir and chloroquine effectively inhibit the recently emerged novel coronavirus (2019-nCoV) in vitro. *Cell Res* 2020; 30: 2–71.
- [6]. Liu J, Cao R, Xu M, et al. Hydroxychloroquine, a less toxic derivative of chloroquine, is effective in inhibiting SARS-CoV-2 infection in vitro. *Cell Discov* 2020; 6: 16.
- [7]. Lo MK, Jordan R, Arvey A, et al. GS-5734 and its parent nucleoside analog inhibit filo-, pneumo-, and paramyxoviruses. *Sci Rep* 2017; 7: 43395.
- [8]. Sheahan TP, Sims AC, Graham RL, Menachery VD, Gralinski LE, Case JB, Leist SR, Pirc K, Feng JY,

- Trantcheva I, Bannister R. Broad-spectrum antiviral GS-5734 inhibits both epidemic and zoonotic coronaviruses. *Science translational medicine*. 2017 Jun 28;9(396).
- [9]. Warren TK, Jordan R, Lo MK, et al. Therapeutic efficacy of the small molecule GS-5734 against Ebola virus in rhesus monkeys. *Nature* 2016; 531: 381–85.
- [10]. Brown AJ, Won JJ, Graham RL, et al. Broad spectrum antiviral remdesivir inhibits human endemic and zoonotic deltacoronaviruses with a highly divergent RNA dependent RNA polymerase. *Antiviral Res* 2019; 169: 104541.
- [11]. Sheahan TP, Sims AC, Leist SR, et al. Comparative therapeutic efficacy of remdesivir and combination lopinavir, ritonavir, and interferon beta against MERS-CoV. *Nat Commun* 2020; 11: 222.
- [12]. de Wit E, Feldmann F, Cronin J, et al. Prophylactic and therapeutic remdesivir (GS-5734) treatment in the rhesus macaque model of MERS-CoV infection. *Proc Natl Acad Sci USA* 2020; 117: 6771–76.
- [13]. Pizzorno A, Padey B, Julien T, Trouillet-Assant S, Traversier A, Errazuriz-Cerda E, Fouret J, Dubois J, Gaymard A, Lescure X, Duliere V. Characterization and treatment of SARS-CoV-2 in nasal and bronchial human airway epithelia. *bioRxiv*. 2020 Jan 1.
- [14]. Williamson B, Feldmann F, Schwarz B, Meade-White K, Porter D, Schulz J, Van Doremalen N, Leighton I, Yinda CK, Pérez-Pérez L, Okumura A. Clinical benefit of remdesivir in rhesus macaques infected with SARS-CoV-2. *BioRxiv*. 2020 Jan 1.
- [15]. Mulangu S, Dodd LE, Davey RT Jr, et al. A randomized, controlled trial of Ebola virus disease therapeutics. *N Engl J Med* 2019; 381: 2293–303.
- [16]. Grein J, Ohmagari N, Shin D, Diaz G, Asperges E, Castagna A, Feldt T, Green G, Green ML, Lescure FX, Nicastri E. Compassionate use of remdesivir for patients with severe Covid-19. *New England Journal of Medicine*. 2020 Apr 10.
- [17]. Holshue ML, DeBolt C, Lindquist S, et al. First case of 2019 novel coronavirus in the United States. *N Engl J Med* 2020; 382: 929–36.

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