The outbreak of COVID-19 pandemic in China regarded as a major health/economic hazard. The importance of coming up with mechanisms for preventing or treating COVID-19 has been felt across the world. This work aimed at examining the efficiency of Statiglitin (ST) and human immunodeficiency virus type 1 (HIV-1) trans-activator transcription peptide (TAT) against SARS-CoV-2.

Background.

The efficacy of TAT in reducing viral load has been investigated in several studies. However, the ability of ST to inhibit viral replication is less known. Therefore, the current study aimed to investigate the inhibitory effect of ST and TAT on SARS-CoV-2 replication in vitro.

Methods.

A matched-cohort study conducted (25 February 2020-15 April 2021) at the IRCSS San Raffaele, Milan, Italy; University of Toronto, Oakville, Ontario, Canada; and Universidad de Navarra, Pamplona, Navarra, Spain.

Results.

Matched-cohort study conducted (25 February 2020-15 April 2021) at the IRCSS San Raffaele, Milan, Italy. The study enrolled hospitalized patients with pneumonia and a SARS-CoV-2 positive nasopharyngeal swab (NPS) at admission and ended at the date of the first negative NPS (within 30 days after discharge). Patients who received RDV (cases) and patients who did not (controls) were matched based on age (±5 years), sex and PaO2/FiO2. Follow-up started at hospital admission and ended at the date of the first negative NPS (within 30 days after discharge).

Discussion.

Evidence regarding the impact of remdesivir (RDV) on SARS-CoV-2 viral clearance (VC) is scarce. Aim of this study was to compare VC timing in COVID-19 patients who received RDV with those who did not.

Methods.

Matched-cohort study conducted (25 February 2020-15 April 2021) at the IRCSS San Raffaele, Milan, Italy. The study enrolled hospitalized patients with pneumonia and a SARS-CoV-2 positive nasopharyngeal swab (NPS) at admission and ended at the date of the first negative NPS (within 30 days after discharge). Patients who received RDV (cases) and patients who did not (controls) were matched based on age (±5 years), sex and PaO2/FiO2.

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Results. 648 patients were enrolled: 216 cases and 432 controls. Patients' characteristics at admission are reported in Table 1. VC was observed in 490 patients (75.6%) in a median time of 25 (16-34) days. Overall, time to VC was similar in patients receiving or not receiving remdesivir (p=0.519). However, time to VC was different when considering both the use of RDV (yes vs no) and age (≤ or > 63 years), as shown in Figure 1A. A significant finding was also observed considering the use of RDV and P/F values at admission (≤ or > 200 mmHg), as reported in Figure 1B. Among the 490 patients who received VC during follow-up, overall time to VC was similar in patients receiving or not receiving RDV (p=0.075; Figure 2A); however, RDV use was associated with a higher probability of VC in the subgroup of patients with P/F admission values ≤ 200mmHg (p=0.035; Figure 2B), in the age group 55-65 years (p=0.025; Figure 2C) and in patients with comorbidities (p=0.028).

Table 1. Characteristics, respiratory function and laboratory values at admissions of hospitalized patients according to the use of remdesivir.

| Variable          | Overall (n=440) | Remdesivir (n=216) | No remdesivir (n=224) | P-value |
|-------------------|-----------------|---------------------|------------------------|---------|
| Age years         | 65 (31.77)      | 61 (28.67)          | 64 (28.76)             | 0.617   |
| Sex               | Female 216 (39.9%) | 86 (39.9%)     | 127 (56.4%)            | 1.000   |
| Ethnicity         | White 372 (35.2%) | 174 (80.9%)      | 174 (77.5%)            | 0.023   |
| Body Mass Index, kg/m² | 26.0 (5.4-36.5) | 27.1 (14.2-35.0)  | 26.0 (5.4-30.0)        | 0.55    |
| Hb/F ratio, mm     | 10.8 (6.0-13)   | 10.5 (6.0-13)      | 10.7 (6.0-13)          | 0.067   |
| Number of comorbidities | 0.011          |                     |                        |         |
|                   | 0               | 0.025               | 0.01                  |         |
|                   | 1               | 0.025               | 0.01                  |         |
|                   | 2               | 0.025               | 0.01                  |         |
|                   | 3               | 0.025               | 0.01                  |         |
| Neurological dysfunction | 0 (0.01)       |                     |                       |         |
| Cardiovascular disease | 177 (37.5%)  | 58 (27.0%)          | 119 (27.0%)            | 0.020   |
| Cancer            | 41 (45.6%)      | 13 (51.9%)          | 28 (43.3%)             | 0.494   |
| Diabetes          | 106 (23.4%)     | 39 (21.0%)          | 67 (20.2%)             | 0.269   |
| Hyperension       | 205 (44.1%)     | 94 (43.0%)          | 111 (40.5%)            | 0.163   |
| FulgVO2, mmHg, nasal | (200)           | 59 (27.4%)          | 200 (47.7%)            | 0.002   |
| FulgVO2, mmHg, oral | (200)           | 117 (52.4%)         | 220 (60.0%)            | 0.351   |
| A LT, L/L          | 31 (42.8%)      | 32 (42.8%)          | 19 (45.5%)             | 0.179   |
| Creatinine, mg/dL  | 93 (78.9%)      | 93 (78.9%)          | 93 (78.9%)             | 0.014   |
| Lymphocytes, 10³/µL | 1.8 (1.1-3.1)   | 1.8 (1.1-3.1)       | 1.8 (1.1-3.1)          | 0.004   |
| C reactive protein, mg/dL | 55.3 (28.8-113.8) | 56.1 (28.0-142.8) | 55.5 (28.0-142.8) | 0.176   |
| D-dimer, ng/mL     | 8.09 (0.4-1.0)  | 8.70 (0.4-2.1)      | 8.10 (2.0-1.1)         | <0.0001 |
| Interleukin 6, pg/dL | 24.4 (3.5-53.8) | 21.2 (3.5-53.8)    | 30.1 (3.5-89.0)        | 0.0000  |

Time to viral clearance among the 490 patients who reached VC during follow-up. Panel A: time to VC according to RDV use. Panel B: time to VC according to RDV and P/F ratio value at admission. Panel C: time to VC according to RDV in the age group 55-65 years.

Conclusion. Time to viral clearance was similar in patients receiving or not receiving remdesivir; however, use of RDV was associated with a benefit on time to viral clearance in younger patients and in those with a P/F ratio at admission ≤200 mmHg.

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