REGEN-Cov antibody combination to prevent COVID-19 infection in kidney transplant recipient without detectable antibody response to optimal vaccine scheme

Didier DUCLOUX, Cécile COURIVAUD

PII: S0085-2538(21)01216-3
Reference: KINT 2890

To appear in: Kidney International

Received Date: 23 November 2021
Revised Date: 9 December 2021
Accepted Date: 23 December 2021


This is a PDF file of an article that has undergone enhancements after acceptance, such as the addition of a cover page and metadata, and formatting for readability, but it is not yet the definitive version of record. This version will undergo additional copyediting, typesetting and review before it is published in its final form, but we are providing this version to give early visibility of the article. Please note that, during the production process, errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Copyright © 2022, Published by Elsevier, Inc., on behalf of the International Society of Nephrology.
REGEN-Cov antibody combination to prevent COVID-19 infection in kidney transplant recipient without detectable antibody response to optimal vaccine scheme

Didier DUCLOUX, Cécile COURIVAUD

CHU Besançon, Department of Nephrology, Dialysis, and Renal Transplantation, Federation hospitalo-universitaire INCREASE, F-25000, Besançon, France
UMR RIGHT 1098, INSERM-EFS-UFC, 1 Bd Fleming, 25000, Besançon, FRANCE

Correspondance: Pr Didier Ducloux, MD, PhD, Department of Nephrology, Dialysis, and Renal Transplantation, F-25030, Besançon, France. Tel: (33)381218782; Fax: (33)381218781; E-mail: didier.ducloux@univ-fcomte.fr
A large part of kidney transplant recipient (KTR) do not respond to anti-SARS-Cov-2 vaccine. Indeed, concordant data indicate that about thirty percent of KTR do not develop antibodies after three doses of mRNA vaccines (1, 2). However, KTR are at high risk of severe forms of COVID-19 infection. Mortality rates are reported to reach 15 to 20% and need for hospitalization in intensive unit care is even more likely (3). In this setting, consideration for alternative prevention strategy of COVID-19 infection is particularly required. Recently, REGEN-Cov antibody combination (Casirivimab + Imdevimab) has been proven to be efficient to prevent infection in persons at risk for infection because of household exposure to a person with SARS-CoV-2 infection (4). Nevertheless, no data are available for pre-exposition prevention in patients at risk. The French government recently authorizes the use of REGEN-Cov to prevent COVID-19 infection in immunocompromised patients without any antibody response after three doses of anti-SARS-Cov-2 vaccine (https://www.has-sante.fr/jcms/p_3281999/fr/covid-19-autorisation-d-acces-precoce-acordee-a-un-traitement-prophylactique).

We reported the use of REGEN-Cov in pre-exposition prevention in KTR.

Among 402 KTR having received three doses of vaccines and for whom serology was available, 119 (29.6%) had no antibody response (Anti-S titer < 50 AU, SARS-Cov-2 immunoassay, Abbott® designed to detect IgG antibodies to the receptor-binding domain (RBD) of the S1 subunit of the spike protein of SARS-CoV-2). Pre-exposition prevention was proposed to all of them. During the study period, the delta variant accounted for more than 99% of COVID cases. Regen-Cov is effective against the delta variant (5).
The first dose of REGEN-Cov (1200 mg) was administered intravenously. The subsequent doses (600 mg) were administered subcutaneously every 4 weeks. Nasopharyngeal swabs were obtained for patients to test for SARS-Cov-2 by RT-qPCR before each administration of REGEN-Cov. Anti-S antibodies were also measured before each treatment.

Ninety one patients (76%) accepted while twenty eight refused. Among the 91, only 88 received a first dose of REGEN-Cov. One experienced COVID infection three days before the scheduled perfusion of REGEN-Cov and two declined treatment after initial acceptance.

The characteristics of the patients are depicted in table 1.

All the 88 patients received at least two maintenance injection after the initial perfusion. No patient reported having been in contact with COVID 19 positive person. No adverse effect was observed in any patient. No acute rejection occurred during the study period. Immunosuppressive treatment was not modified.

During treatment, anti-S antibody titers were > 40000 AU in all patients.

During the observed period, no patient of the prophylaxis group developed COVID infection. By contrast, in those without prevention, 5 (16%, p<0.001) experienced COVID infection and two of them required hospitalization in intensive care unit. One died three weeks after admission.

REGEN-COv is safe in pre-exposition prevention in KTR without detectable vaccine response. Very high antibody titers are achieved in all patients. Preliminary data suggest efficient prevention of COVID-19 infection in this very high-risk population.
REFERENCES


Table 1: Characteristics of study patients

<table>
<thead>
<tr>
<th></th>
<th>Participants (n=88)</th>
<th>Non participants (n=31)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>62 [55-70]</td>
<td>61 [51-70]</td>
<td>0.973</td>
</tr>
<tr>
<td>Gender (% male)</td>
<td>63%</td>
<td>59%</td>
<td>0.664</td>
</tr>
<tr>
<td>Transplant vintage (months)</td>
<td>29 [14-91]</td>
<td>158 [60-194]</td>
<td>0.145</td>
</tr>
<tr>
<td>eGFR (ml/min/1.73m²)</td>
<td>48 [30-68]</td>
<td>47 [31-79]</td>
<td>0.352</td>
</tr>
<tr>
<td>CNI use</td>
<td>81%</td>
<td>74%</td>
<td>0.629</td>
</tr>
<tr>
<td>MPA use</td>
<td>81%</td>
<td>84%</td>
<td>0.695</td>
</tr>
<tr>
<td>mTORi use</td>
<td>8%</td>
<td>10%</td>
<td>0.767</td>
</tr>
<tr>
<td>Belatacept use</td>
<td>10%</td>
<td>10%</td>
<td>0.928</td>
</tr>
</tbody>
</table>