Convalescent plasma is an ineffective treatment for patients with COVID-19

What is this research about?

Convalescent plasma (plasma collected from individuals who have recovered from an infection) has historically been used to treat various diseases, including SARS-CoV-1, MERS-CoV, and influenza. At the onset of the COVID-19 pandemic, convalescent plasma from individuals who had recovered from COVID-19 stood as a potential antibody-based treatment for patients. However, there was insufficient evidence at the time on the safety and risks of COVID-19 convalescent plasma (CCP). In May 2020, the CONCOR-1 trial was developed to explore CCP as a potential treatment for patients with COVID-19. This Canadian-led international clinical trial compared convalescent plasma and standard-of-care for hospitalized adults with acute COVID-19 respiratory illness requiring supplemental oxygen.

IN BRIEF: Convalescent plasma from people who have recovered from COVID-19 shows no benefit as a treatment for patients hospitalized with COVID-19.

What did the researchers do?

Seventy-two hospitals across Canada, the United States, and Brazil included 940 patients in this analysis with 796, 134, and 10 patients enrolled respectively. Convalescent plasma was collected from donors with a prior diagnosis of COVID-19 documented by a PCR test and were symptom-free at least 14 days prior to first donation. Because their plasma contains antibodies against SARS-CoV-2, it was hypothesized that CCP would improve patients' immune response to the illness. Patients randomized in the trial received either approximately 500 mL of plasma from a single donor, or 2 units of 250 mL of plasma from one or two donors. The primary objective of this trial was to determine the effect of CCP on rates of death and intubation within the study time period of 30 days.

What did the researchers find?

The study investigators did not observe a decrease in death or intubation in patients receiving CCP. Low levels of antibodies in CCP were seemingly more harmful to patients than standard-of-care (receiving no CCP). As each donor has a unique antibody profile, the levels of antibody in each donated CCP product varied. This meant the impact of CCP on each patient was different. The study team speculated that the patient group receiving convalescent plasma experienced a higher incidence of serious adverse events than the standard-of-care group possibly due to unfavourable antibody profiles (low levels of antibody or poorly functioning antibodies). Most of

these serious adverse events included worsening hypoxemia and respiratory failure which were recorded by the clinical research team within the 30-day study period.

How can you use this research?

Findings from this study do not support the use of CCP as a treatment for patients with COVID-19 outside of a clinical trial setting. Further research is necessary to characterize unfavourable antibody profiles and its competitive interaction with the patient. There is a possibility that CCP may benefit patients with certain immune profiles. Due to the competitive nature of CCP with the patients' existing immune response, CCP may benefit immunosuppressed patients that are unable to mount any antibody response on their own. More research into this topic will improve our understanding of potential risks and benefits of CCP in certain patient populations. Results are expected to guide clinical practice and policies on a global scale, especially where COVID-19 vaccination and treatment availability are scarce. Beyond COVID-19, concepts learned from CCP studies are expected to serve as models for future clinical studies.

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