

# ASHC 2023

## Title

### Changes in the Fibrinolytic System of Patients Infected with Severe Acute Respiratory Syndrome Coronavirus 2

## Authors

Esra'a Abudouleha, Fatimah Alhamlan<sup>b,c</sup>, Arwa A. Al-Qahtanid, Marie Boholb, Amal Al Hazzania, Khadija Khorfane, Morad Alkaffe, Tarek Owaidahe<sup>f,\*</sup>, Ahmed A. Al-Qahtanib<sup>c,\*</sup>

1. <sup>a</sup>Department of Botany and Microbiology, College of Science, King Saud University, Riyadh, Saudi Arabia.

## Introduction

In this study, coagulation and fibrinolysis parameters and their association with disease severity were investigated in coronavirus disease (COVID-19) patients.

## Methodology

COVID-19 patients (n = 446) admitted to our institute between 21 February 2021 and 17 March 2022, were recruited. Clinical data and staging were collected from all patients. Blood samples were collected and analyzed for several parameters of fibrinolysis and coagulation, including alpha-2-antiplasmin ( $\alpha$ 2AP) and plasminogen, thrombin activatable fibrinolysis inhibitor (TAFI), tissue plasminogen activator (tPA), plasminogen activator inhibitor-1 (PAI-1), D-dimer, and fibrinogen levels.

## Results

The TAFI, fibrinogen, and tPA levels were significantly higher in participants who died compared to that of patients who recovered ( $p < 0.001$ ). However, PAI-1, tPA, and TAFI were significantly higher in patients admitted to the ICU than those of the healthy controls ( $p < 0.001$  for PAI-1 and tPA;  $p = 0.0331$  for TAFI). Our results showed that stage C and D COVID-19 patients had significantly higher levels of PAI-1 ( $p = 0.003$ ). Furthermore, stage D COVID-19 patients had significantly higher tPA and TAFI values ( $p = 0.003$ ).

## Conclusion

Hypofibrinolysis was the most prevalent condition among patients with severe COVID-19. In this study, several coagulation markers were elevated, making them suitable prognostic markers for hypofibrinolysis.