

The effects of altered PK/PD parameters on efficacy and toxicity of therapeutic drugs in critically ill patients with COVID-19

Mimi Tang¹, Ting Liu¹, and Xiaoping Chen¹

¹Xiangya Hospital Central South University

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Abstract

Although many therapies have been proposed, there is no evidence of any effective treatment for COVID-19 to date. Currently, the main therapies being used to treat the critically patients with COVID-19 are antiviral drugs, chloroquine/hydroxychloroquine and respiratory therapy. Pharmacokinetics (PK) and pharmacodynamics (PD) play an important role in different clinical situations, and are keys to balance the effect (reduction of SARS-CoV-2 virus and symptom improvement) and toxicity (adverse effects). Critically ill patients always have altered PK and PD due to multiple factors such as hypoproteinemia, organ dysfunction, and organ support treatment including continuous renal replacement therapy (CRRT), and extracorporeal membrane oxygenation (ECMO). Here we provide an overview of the effects of the clinical treatments for critically COVID-19 patients and the pathological state of patients on pharmacokinetics and pharmacodynamics parameters of therapeutic drugs in detail. However, current evidence is insufficient to speculate the changes of drug concentration of antimicrobials, therapeutic drug monitoring (TDM) is a useful tool used in severe patients since many suspected factors were exist to influence the clinical responses and adverse drug reactions of drugs.

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