Pulmonary Herpes Simplex Virus reactivation in COVID-19 patients in ICU

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Mots clés (max 3) : COVID-19 ; Herpes simplex virus reactivation ; antiviral resistance

Résumé (max 300 mots) :

Herpes simplex virus (HSV) reactivation in lower respiratory tract (LRT) can occur in COVID-19 patients with acute respiratory distress syndrome in intensive care unit (ICU) leading to poor prognosis. We reassessed the rate of HSV reactivation in COVID-19 patients during the omicron spread, compared HSV loads in COVID and non-COVID groups and evaluated HSV antiviral susceptibility.

This retrospective study was conducted in 3 ICU of the University Hospital of Lyon from January 1st to December 31th 2022 on patients with virological COVID-19 diagnosis in LRT. HSV loads were performed using HSV1 ELITe MGB assay (ELITechGroup, France), SARS-CoV-2 and cell quantification were achieved by COVID-19 R-GENE (BioMérieux, France). Mutations were detected by NGS targeting *UL23* and *UL30* genes on D0 and D7 samples, when the viral load was > 10^5 copies/mL (1).

413 patients underwent COVID and HSV testing: 134 were SARS-CoV-2 positive and 279 were negative. 43 (10.4%) were SARS-CoV-2/HSV-positive and 216 (52.3%) were both negative. 63 (15.2%) non-COVID patients experienced HSV reactivation and 91 (22.0%) COVID patients did not. All HSV specimens were HSV1 positive. Proportion of HSV reactivation was significantly higher in COVID (32.1%) than in non-COVID patients (22.6%; p.value<0.05). Mean HSV load was 98436 and 76047 copies/10000 cells (p.value=0.7069) in COVID and non-COVID group respectively. Three patients presented an acyclovir resistance at D7 due to a shift of the reading frame, R51W and R220H mutations in *UL23.* Three non – previously characterized substitutions *in UL23* (T27M, P84Q, Q104H) and five in *UL30* genes were detected (T54K, Q217R, M228V, D741A, E756K).

The rate of pulmonary HSV reactivation in COVID patients during Omicron period appears to be similar to previous waves. No difference in HSV load was observed between the two groups. The place of the treatment regarding the risk of emergence of resistance must be further explored.

1. Giorgi J, Simon B, Destras G, Semanas Q, Ginevra C, Boyer T, et al. Novel UL23 and UL30 substitutions in HSV1 and HSV2 viruses related to polymorphism or drug resistance. Antiviral Research. 1 août 2023;216:105672.