



Should etoposide be used in the treatment of cytokine storm of COVID-19?

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KEY FINDINGS

- There is no direct evidence in the effect of etoposide on possible symptoms of cytokine storm in COVID-19.
- Etoposide is a DNA topoisomerase used as a chemotherapy drug that is believed to exhibit potent deletion of activated pathologic T cells as well as efficient suppression of inflammatory cytokine production. [1, 2, 3, 4]
- Etoposide is part of the current treatment for infection-induced hemophagocytic lymphohistiocytosis (HLH). Symptoms are similar to the cytokine storm reported in some COVID-19 cases.
- There were no clinical studies found that directly assesses the effect of etoposide on cytokine storm or hyper-inflammation caused by COVID-19.
- Indirect evidence in one cohort study among patients with Epstein-Barr virus (EBV)-associated hemophagocytic lymphohistiocytosis [5] showed significant difference in overall survival rate with early treatment with Etoposide.
- The Histiocyte Society [6] stated that current data are insufficient to allow specific treatment recommendations on COVID-19.

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RESULTS

There were no clinical studies that directly assessed the effect of etoposide on cytokine storm or hyperinflammation caused by COVID-19.

The indirect evidence on etoposide in the management of cytokine storm was in a cohort study which enrolled 47 pediatric and young adult patients with Epstein-Barr virus (EBV)–associated hemophagocytic lymphohistiocytosis. [5] The long-term survival with those in the etoposide-based regimen was significantly higher compared to non-etoposide conventional treatment

However, as this is indirect evidence, applicability issues will arise when considering patients with COVID-19. The cohort is comprised of children and young adults, with 75% exhibiting moderate to severe Epstein-Barr virus (EBV)–associated hemophagocytic lymphohistiocytosis.

The Histiocyte Society [6] stated that current data are insufficient to allow specific treatment recommendations on COVID-19.

CONCLUSION

At present, there is no direct evidence in the effect of etoposide on possible symptoms of cytokine storm in COVID-19.

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