SARS-COV-2 AND COVID-19: IN SIGHT TREATMENT?

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Faced with this unique challenge, which is the epidemic caused by this new virus, SARS-COV-2, it is up to all of us as active members of the medical and scientific community to quickly explore solutions to contain the epidemic, including exploring therapeutic options with antiviral drugs. and research with prophylactic and therapeutic vaccines. In this context, my research group and I are especially interested in exploring the safety and effectiveness of the drug nitazoxanide, which has a broad and nonspecific antiviral effect, which has the potential to be more intense in the case of coronavirus in general. Approximately 250 million people have been treated with Nitazoxanide worldwide, and side effects are limited to gastrointestinal symptoms such as epigastric pain and diarrhea. Nitazoxanide can be safely administered for an extended period exceeding 12 months[1].

Treatment with nitazoxanide 600 mg was associated with mitigating the intensity and duration of signs and symptoms and reducing the time to detect viruses in patients with acute influenza. An in vitro study has shown that nitazoxanide is effective in inhibiting the replication of all tested influenza virus variants, including those resistant to amantadine and oseltamivir. In another study, the antiviral potential of nitazoxanide was described, where in vitro studies of efficacy against influenza A and B and avian influenza are cited, in addition to a phase 2b/3 clinical trial showing that nitazoxanide was well tolerated, reducing clinical symptoms flu and viral load[2].

The efficacy of nitazoxanide as a therapy for gastroenteritis caused by norovirus in immunocompromised patients was also demonstrated in a clinical study, in addition to acting on viral gastroenteritis, reducing the duration of infection in immunocompetent children. Still regarding immunocompromised patients, there was a case report demonstrating the efficacy of nitazoxanide in an immunocompromised patient with adenovirus-related diarrhea. Here, the treatment made it possible to resolve the diarrhea in 2 days and samples of plasma and feces were negative for the virus after 4 days of treatment[3].

Nitazoxanide also broadly amplifies the host's innate immune response to the virus, also inhibiting Ebola virus replication, according to another study. In peripheral blood mononuclear cells, Nitazoxanide potentiated the production of Interferon type 1 (alpha and beta) produced by the individual's fibroblasts and inhibits the production of IL-6, having an important immunomodulatory effect. Not only IL-6, but it also inhibits the production of pro-inflammatory cytokines.

Regarding the Coronavirus, the in vitro anti-viral efficacy of nitazoxanide has been demonstrated against the virus causing the Middle East respiratory syndrome (MERS-CoV) as well as against other animal and human coronaviruses as well. With the arrival of COVID-19, Nitazoxanida was tested in cell culture showing great efficiency. Clinical studies have already been carried out with several variants of human Coronavirus with excellent results. These studies are currently being repeated with SARS-CoV-2, the causative agent of COVID-19, for FDA approval in the United States, just as there are ongoing studies in Brazil in the same direction. These results are encouraging, that is, we are seeing light not only at the end of the tunnel, but along the crossing. ■

REFERENCES

1. Leyva-Grado VH, behzadi MA. Overview of current therapeutics and novel candidates against influenza, respiratory syncytial virus and Middle East respiratory syndrome coronavirus infections. Frontiers in microbiology. 2019; 10:1327.
2. Jasenosky KD, et al. The FDA-approved oral drug nitazoxanide amplifies host antiviral responses and inhibits Ebola virus. iScience. 2019; 19:1279-1290.
3. Haffizulla J, et al. Effect of nitazoxanide in adults and adolescents with acute uncomplicated influenza: a double-blind, randomised, placebo-controlled, phase 2b/3 trial. The Lancet Infectious Diseases. 2014; 14(7):609-618.