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Project title

COMPARATIVE ANALYSIS OF Sars-Cov2 MOLECULAR TECHNIQUES ON DIFFERENT BIOLOGICAL SAMPLES IN A COHORT OF PATIENTS UNDERGOING ANTICANCER THERAPY

Acronym/working title

ddPCR OnCOVID

Principal Investigator

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Registration number of the Ethical approval

Comitato Etico Interaziendale di Novara N° 80/20

Project summary

In December 2019, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) emerged in China, and it has since spread widely across the world. The resulting coronavirus disease 2019 (COVID-19) has led to a high death toll. Scientific knowledge on SARS-CoV- 2 has evolved rapidly since the outbreak, but little is known about responses to the virus in immunocompromised population, e.g. the onco-hematologic patients. Infection with respiratory viruses has been shown to be particularly concerning in cancer patients due to prolonged viral shedding and a higher risk of complications. Determining viral loads and antibody kinetics in these individuals is necessary to protect this highly frail population. Thus, the necessity of developing new technologies raises as a major clinical need.

In the OnCOVID research project in order to allow the rapid taking care and correct management of the SARS-CoV-2 infected onco-hematologic patients will be used innovative molecular techniques developed by the Molecular Virology Laboratory (UPO) as follow:

- droplet digital PCR (ddPCR) to detect SARS-CoV-2 viral load. This technology allows an absolute, precise, and ultrasensitive quantitation of nucleic acids. Emerging evidence indicates better performance of ddPCR in detecting low viral load samples when compared to the routinely used real time assay (RT-qPCR), which gives rise to a remarkable number of false negative results. Furthermore, with the aim of developing an easy surveillance approach, the use of saliva in this assay allows a simpler sampling than nasopharyngeal swab, causing minor discomfort to the patients, thus, allowing to implement repeated monitoring of the infection over time. Saliva, as reported in the literature, represents a reliable sample to diagnose SARS-CoV-2 infection and appears to be even more sensitive than nasopharyngeal swab to identify subjects with low viral load.

-neutralization assay (NTA) to detect the neutralizing antibodies, a small subset of the antibodies that bind a virus, that are able to block the infection (e.g. inhibiting the interactions with the receptor, the uncoating of the genome…).

Duration of Study

Study start: June 2020
Study end: Dec 2021

Total number of participants involved:

200

Biological samples collected:

- ✓ serum
- ✓ plasma sodium-citrate
- ✓ buffy coat
- ✓ plasma EDTA