

Therapeutic Prospects for SARS-CoV-2 Infection with

Cytokine Storm

Chang-Youh Tsai, MD, PhD

A 48 year-old lady with an underlying diseases of hypertension, diabetes mellitus and breast cancer came back from China late in March 2020, presenting with fever and devastating dyspnea as well as cardiac embarrassment. After confirming to be infected by SARS-CoV-2 she was immediately admitted to the quarantine intensive care unit of a Cardinal hospital in the suburban area of Taipei City. The condition deteriorated rapidly despite therapies with levofloxacin and oseltamivir. Thus, she was intubated and transferred to Taipei Veterans General Hospital for further care. Because of severe acute respiratory distress syndrome with profound hypoxemia, she was soon put on the extracorporeal membrane oxygenation (ECMO) support. Tubal hydroxychloroquine 400 mg twice a day, intravenous teicoplanin as well as tazocin were also given. Because of a deterioration of the bilateral consolidation in lungs and continuous need for oxygen support (with FiO₂ 100%), we suspected a presence of cytokine storm in the lungs and decided to give her intravenous tocilizumab with a dose of 320 mg and 240 mg intravenously 12 hours apart. After the second dose of tocilizumab, the condition dramatically improved with swift clearing of bilateral pulmonary infiltration and normalization of acute phase reactants (CRP & ESR) as well as the general condition. The patient was finally discharged from the hospital with no conceivable sequelae of pulmonary fibrosis. She is still followed up in Chest Department in Taipei Veterans General Hospital.

In this mini-review, the viral infection (such as COVID-19) associated with ARDS and the possibilities of therapeutic modalities for it will be briefly discussed.

病人科別:CM 會診部科:AIR - MEDD 會診等級:REGULAR

申請日期:20200401 1457 會診期限:20200406

病史:

This 48 y/o woman with underlying disease of HTN, DM, breast cancer. This time she was admitted for SARS-COV2 infection with severe pneumonia and ARDS. We'll need your expertise for her possible injection for possible cytokine control, thank you very much~

會診內容:

Dear Dr. in charge:

This 75 y/o female was a victim of COVID-19 infection. She ever received levofloxacin (20200320-0331) and temiflu (20200320-0325) at other hospital. Due to acute respiratory failure and ARDS, she was intubated on 3/31 and transferred to our hospital. Chest X-ray disclosed progressive bilateral lungs consolidation. Currently, plaquenil 400mg bid (one day) and then 200mg bid, tazocin and teicoplanin were given. We are consulted for tocilizumab usage.

Suggestion:

1. Theoretically, biologics could not kill virus but it might suppress sequential cytokine release syndrome (cytokine storm). Therefore, adequate and proper antibiotics were still the first priority. There were still rare experience or published article to mention about tocilizumab for COVID-19 treatment, currently.
2. Storage serum for testing IL-6 concentration (保存方式已交班照顧之醫師)
3. According to Chinese Clinical Guidance for COVID-19 Pneumonia Diagnosis and Treatment (7th edition), recommendation of immunotherapy: for patient with extensive lung disease and elevated IL-6 level, tocilizumab can be tried. The first dose is 4-8 mg/Kg (the maximum single dose should not exceed 800mg). If the first medication is not effective, it can be applied once more after 12 hours as the same dose. (仍建議施打tocilizumab前,須先告知病患/家屬並取得其同意).
4. There are several ongoing clinical trials about tocilizumab for COVID-19 (<https://clinicaltrials.gov/ct2/results?term=COVID+TOCILIZUMAB&Search=Search>), and we can look forward to and wait these results.
5. If any problem or query, please contact us.

Thanks your consultation!!

會診醫師一:廖顯宗 會診醫師二: 會診醫師三:

會診完成日期時間:20200401 1750