

Photodynamic Inactivation of Symptomatic COVID-19 Disease In A Married Couple

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Covid-19 infection is a wide spreader viral disease that now affects large parts of the global population, regardless of age, gender or vaccination status. While many patients survive the disease well with flu-like symptoms, severe courses of the disease, including multi-organ failure have been reported. In addition, many people complain about protracted recovery periods.

Various drug strategies have been tested to mitigate the course of the disease. An interesting approach is the early photodynamic inactivation of the virus in the upper respiratory tract, where the virus initially starts its course. The reduction of the viral load in the naso- and hypopharynx could shorten the clinical course of the disease, improve the prognosis and reduce the infectivity of those affected. It is well known that the combination of methylene blue and light can be used successfully for blood plasma sterilization of extracellular enveloped and non-enveloped viruses. [1-4] Arentz and von der Heide [1] published a promising article about methylene blue based inactivation against intracellular and free planktonic B-CoV and SARS-CoV-2 viruses. The result of their study shows a simple and inexpensive treatment method for the early phase of a SARS-CoV-2 infection which can be used if there is no involvement of deeper bronchial sections or systemic spread of the virus in the body. Through the combination of 0,001% methylene blue solution and a simple LED flashlight the authors reduced the viral load locally by more than 5 log steps in 3 minutes.

In the following, we report on a symptomatic COVID-19 infection in a married couple, who were both successfully treated with photodynamic therapy in the same way as described by these authors.

1. Case 1

A 69-year well trained man with stable coronary heart disease contracted COVID-19 on October 12th, 2022, exactly 1 day after his cardiological check-up. The man had been vaccinated 4 times against COVID-19, namely on 07.04.21, 13.05.21, 02.11.21 and 10.03.22 in each case with

Comirnaty. With the beginning of chills, aching limbs, and weakness the SARS-CoV-2 Antigen rapid test performed at home at the same evening was positive. Following informed consent, he started photodynamic inactivation therapy 12 hours after the start of symptoms. As his wife suffered from similar symptoms, she also started this therapy at the same time, although her Antigen rapid test and her PCR test were negative (See case 2).

The PCR-Test of the gentleman on October 12th turned positive (probably due to the Omicron variant BA.5) with a CT value of 19.4. COVID-19-IgM (Anti-S) was negative. He treated himself at home 3 times daily with methylene blue (Anti-CoV 2 / photolase[®]/ Hamburg). He applied 1 puff in each nostril followed by 1-minute LED irradiation and then 2 puffs in his deep throat followed by 2 minutes LED irradiation. On the second day of his infection, he developed a long-lasting severe fatigue and hoarse voice. Five days later his general condition improved significantly; the PCR test was negative (CT value of 30.9) and he finished his quarantine at home. In the following he remained somewhat listless and tired but with quiet good general condition for another 3 weeks.

On the final check up on the 9th of November his IgG/M/A (Anti-N / Roche and Siemens) rose to 15.7, and Anti-S to 25000 BAU/ml. Exercise testing on a treadmill including spiroergometry, echocardiography of the heart and lung function testing including diffusion capacity were normal and almost identical to the findings immediately before his infection.

2. Case 2

The 62-year-old spouse living in the same household, suffered from almost identical complaints as her husband. She had been vaccinated 4 times against COVID-19, namely on 25.03.21, 06.05.21 and 24.11.21 with Vaccine Moderna and on 28.04.22 with Comirnaty. Her SARS Antigen rapid test and her PCR test on October 12th were throughout her disease negative. However, she sustained the same fatigue and aching limbs as her husband and remained in bed for 4 days. Her Anti-S remained throughout unchanged (25 000 BAU/ml on October 12, 23000 BAU/ml on November 11th). As compared to her cardiological tests for control of hypertension in January 22, the results of exercise testing on a treadmill including spiroergometry and echocardiography of the heart on November 11th remained almost identical.

3. Conclusion

Without doubt, the 69-year-old non-smoking

gentleman suffered from symptomatic COVID-19 disease and recovered within 5 days following photodynamic inactivation using methylene blue in his upper airways starting within the first day of symptoms. His smoking 62-year-old spouse experienced the same symptoms and started photodynamic therapy immediately in the same manner. Whereas the gentleman displayed serological proof of infection and antibody response, the spouse showed no evidence of infection and even no booster of her spike-protein (Anti-S). Both patients recovered 5-6 days after start of symptoms.

Although it remains questionable whether the spouse living in the same household attracted COVID-19 disease [5], it is remarkable that the course of her illness almost completely resembles that of her husband. In either case, photodynamic inactivation therapy of the upper airways caused rapid convalescence in both individuals. Final testing 4 weeks after COVID disease demonstrated normal results in cardiopulmonary exercise testing and in cardiac function.

Abbreviations

CT - cycle-threshold-value

PCR – polymerase chain reaction

Anti-S - antibodies to spike protein S 1 of SARS-CoV-2

Anti-N - antibodies to nucleocapsid of SARS-CoV-2

BAU/ml – Binding Antibody Units pro ml

4. References

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