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Mini Review

Oral and Intravenous Iodine Treatment - A Hope to Treat 2019-nCoV Virus Infected Patients

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Abstract

To present intravenous iodine infusion (IVI) treatment, which has been used in serious bacterial infections in the past and has been off the agenda with widely used antibiotics. With the antiviral feature of iodine, to report the rationale of the use in patients with coronavirus infected and symptomatic patients. Also, to report the effective use of iodine therapy as an antiviral product that is safe, easy to use, easy to access and extremely cost-effective in the event of a possible excessive patient burden in hospitals.

Keywords: Intravenous Iodine Infusion (IVI); 2019-nCoV Virus

Introduction

Iodine, which is widely used in clinics as a general antiseptic (including antiviral, antibacterial-spores, antifungal, antiparasite), is a very important element in terms of its physiological functions.

Antiviral effectiveness

Iodine solution (10% Povidone-iodine) is highly effective in eliminating coronavirus, poliovirus and adenovirus species on inanimate surfaces [1,2]. It has been reported that iodine solution is effective virucidal for rhinovirus and coronavirus species in upper respiratory tract by oral washing [3,4]. Irrigation is effective 2 - 4 times a day with 2.5% Betadine (iodine) solution in the treatment of viral (Adenovirus) conjunctivitis.

Prognostic importance of detecting of the pandemic factor virus in plasma

There are 3 stages in the clinical progression of the 2019-nCoV virus (Figure 1).

Stage 1: Early infection. Dry cough, diarrhea, headache, less than 37.2 fever. Lymphopenia, prothrombin time elevation and LDH elevation. At this stage, viremia is not observed.

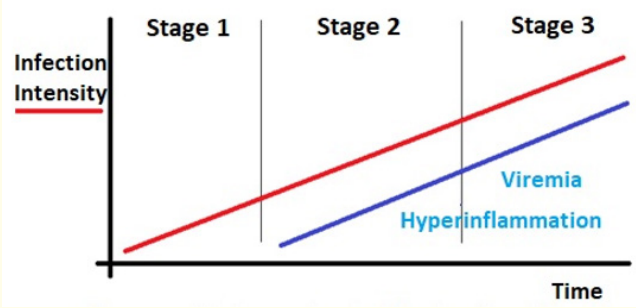

Figure 1: Correlation between intensity of infection and hyperinflammation.

Stage 2: Pulmonary phase. Shortness of breath, Hypoxia (PaO_2 / FiO_2 < 300 mmHg). Abnormal appearance and procalcitonin decrease in chest x-ray in the following clinic. The virus has begun to enter the blood and the patient's immune system is ready to overreact. The mortality rate is 15% [5-7].

Stage 3 III: Hyper-inflammatory phase. There is viremia and the immune system overreacts with cytokines, inflammation becomes evident in the lungs and respiratory distress develops. CRP,

LDH, D-dimer, Ferritin, IL-6, troponin increase. Finally, cardiac failure occurs. The mortality rate is 50% [5-7].

Detection of 2019-nCoV viral RNA in the blood has been demonstrated in a new study from China, where it is a strong indicator of clinical violence and poor prognosis [8]. Therefore, as the stage progresses, the virus is seen in extrapulmonary regions and turns into a systemic disease.

A systemic antiviral treatment is needed to control the disease in the intermediate and advanced stages. However, since there is no specific antiviral against the virus, IODINE in appropriate doses and can be used in treatment as a general antiviral agent. In the intermediate and advanced stages, since the disease is systemic, antiviral therapy should also be systemic (IV infusion).

IV iodine infusion applications

Now a days, IV iodine applications are rarely performed by giving contrast material (300 - 1221 mg/kg iodine) containing iodine for radiodiagnostic purposes (coronary angiography and CT) [9]. In addition, Iodine-131 (10 - 100 mCi, about 8 - 80 mg) is administered via the venous or artery as radioactive iodine therapy [10]. Intravenous iodine treatments were first used in severe bacterial infections in 1920s in IV-infusion, IV-push and intraarterial high doses [11-16]. With the widespread use of antibiotics, IV iodine administration was stopped. Porter reported daily IV infusions in influenza and streptococcal infections, and treatments that repeat these injections 3 or 4 times [13]. In addition, in influenza pneumonia, 30 - 45 mg of iodine (iodine) injection in 9 ml saline daily, repeated these injections once a day for 2 or 3 days, and reported successful results in nine of 10 patients [11].

Mukherjee used intravenously in septic wounds, in cases of Connor septicemia [12,13]. Jeudwine has published a large case experience of 400 patients, injecting 32 - 64 mg of iodine in 10 ml of distilled water or 32 - 64 mg of iodine tincture (1 - 2 ml) directly into the vein. Due to the very high iodine concentration, he reported pain at the injection site, fever that could last for two hours, and only 2 cases developed severe thrombosis within 1000 injections. He reported that he had effective results in many patients, including patients with pneumonia, septic lung and asthma [14]. Castro injected 30 - 90 mg of iodine IV in 10 ml saline in pneumonia patients [15]. Bharadwaj reported that in approximately 100 plague patients, it achieved cure with 80% success with intravenous iodine treatment. In his patients, he administered 150 - 300 mg of iodine in 5 - 10 ml of distilled water daily. He reported that the solution prepared with distilled water compared to tincture (alcoholic solution) eliminated the risk of thrombosis and increased the number of leukocytes [16].

Povidone-iodine 10% was administered as an intravenous infusion to reduce HIV burden in the blood and prevent opportunistic infections [17,18].

Iodine treatment according to the stages

Stage 1: Controlled Immune Response, Upper Respiratory Tract Infection (Ambulatory/Home Follow-up).

Treatment: 25 mg (4 drops) of Lugol 5% solution in 200 ml of water and drink after gargling (Health personnel at risk of contamination can also use).

Stage 2: Lower Respiratory Tract Infection, shortness of breath, hypoxia, chest X-ray abnormality. (Bed service).

Treatment: 1 unit of IV infusion per day.

Stage 3: Hyperinflamation (high acute phase reactants), Respiratory Distress (Intensive Care).

Treatment: In the first two days, 1 unit of IV infusion every 12 hours. 1 or 2 units of IV infusion per day, according to the clinical response. When the general condition improves, iodine treatment is ended.

Conclusion

The antiviral effect of IV-Iodine infusion therapy is predicted in patients with high mortality rate. The application dose is far below past application doses. Follow-up of patients with thyroid hormone panel is recommended. Iodine treatment is a safe treatment that is easy to apply, easy to reach, very low treatment costs and prepared with distilled water. This treatment will allow for easily applicable treatment in inpatient or intensive care units when possible excessive patient admissions.

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