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Research Article

Disinfection of SARS-COV-2 (COVID-19) in Human Respiratory Tract by Controlled Ethanol Vapor Inhalation combined with Asprin

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ABSTRACT

COVID-19 (SARS-CoV-2, a coronavirus) continues to cause significant morbidity and mortality as well as profound stress on the healthcare systems around the world. In addition to its ability to cause fatal acute hypoxemic respiratory failure, and prolonged recovery times, patients with COVID-19 often require protracted inpatient stays; further stressing inpatient capacity and resources. Despite aggressive efforts and widespread clinical trials, to date there are only limited reports of potential efficacious treatments.

Keywords: COVID-19; Pharmacological; Ribonucleic acid; Immune system

INTRODUCTION

This study aims to identify if we could use Ethyl Alcohol inhalation combined with asprin in early stages of COVID-19 infection to improve oxygenation and prognosis, decrease severity of the disease, decrease hospital stay and rate of transfer of the patients from word to ICU and risk of mechanical ventilation.

Theory of asprin

Aspirin is well known drug with various Pharmacological effects; Anti-platelet, Anti- inflammatory aspirin can inhibit viral replication through Prostaglandin E2 (PGE2) inhibition in macrophage and increasing production of type I interferon. Furthermore, aspirin possess anti-inflammatory and analgesic actions due to inhibiting COX enzyme. The early use of aspirin in COVID-19 patients could reduce incidence of disease severity, reduce hospital duration and reduce incidence of cardiovascular complications [1-4] analgesic effects. Moreover, aspirin was proved to possess an antiviral action for some viruses through inhibiting viral replication. Noteworthy, a study confirmed.

Theory of alcohol inhalation

COVID-19 virus contains genetic material Ribonucleic Acid (RNA) packaged in a protein coat called the capsid, which is surrounded by an envelope composed of a lipid bilayer derived from the host cell membrane. Ethyl alcohol is known to inactivate many viruses and constitutes the basis for many hand rubs and disinfectants used in healthcare settings [5] as well as in the general public. In fact, alcohol-based hand rub solutions have been shown to inactivate SARS-CoV-2 in as little as 30 seconds [6,7]. Siddharta, et al. [8] also published data on the effective virucidal activity of ethyl alcohol against enveloped viruses, including Zika, Ebola, as well as coronaviruses.

As late as the 1950s, inhaled Ethanol was found to be both effective and safe in the treatment of pulmonary edema [9,10] as well as Ethyl alcohol withdrawal [11]. In a recent publication by Shintake [12], inhaled ethanol was proposed as a potential method of inactivating respiratory viruses, such as SARS-CoV-2 present in the respiratory tract. While chronic or excessive ethanol consumption is known to have negative effects on human health, including the immune system [13], the effects of intermittent moderate ethanol consumption have not been proven to cause serious long-term deleterious effects.

To date, extensive search of the medical literature reveals no reports of inhaled ethanol used in the treatment of COVID-19.

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Given the lack of a proven effective treatment, the proven viricidal efficacy of ethanol, its historical relative safety profile in treatment of other medical conditions, as well as a lack of evidence showing harm in mild to moderate, non-chronic, non-excessive intake, the hypothesis was proposed that nebulized ethanol may prove beneficial in the treatment of COVID-19.

LITERATURE REVIEW

Coronaviruses can cause diseases in both animals and humans. Many of them typically infect upper respiratory tract with minor symptoms. However, three coronaviruses can infect lower respiratory tract and cause fatal pneumonia; which are severe acute respiratory syndrome corona virus (SARS-CoV), Middle East respiratory syndrome coronavirus (MERS-CoV) and SARS-CoV-2). SARS-CoV-2 shares 78% similarity of genetic material with SARS-CoV. Pathophysiology of both viruses is closely similar, with destructive inflammatory response resulting in airway damage. That's why, disease severity in patients depends, not only on the viral infection, but also on the host response.

In many cases, this will resolve the infection. However, in other cases, immune response dysfunctions and causes severe lung and systemic pathology ending to ARDS and respiratory failure.

Treatment according to author protocol will be focused on using asprin to decrease inflammatory reaction weather from the virus or after using alcohol.

Alcohol will be used by different methods and concentration in order to decrease surface tension on alveoli, decreasing foamy sputum secretion, increasing vascular permeability and improving oxygenation.

Also we will use it as a prophylaxis for health care workers to disinfect the virus as soon as possible while it is present in nasal mucosa and upper airway (Table 1).

Study type	**Interventional**
Study phase	Phase 3 Randomized allocation
Study design	Intervention model: Parallel assignment Masking: None (Open label) Primary purpose: Treatment
Condition	SARS-COV-2 Aspirin+Ethyl alcohol Treatment
Intervention	Aspirin (150 mg/day) for 14 days + Ethyl alcohol in concentrations and methods according to degree of severity of the disease.
Study arms	No intervention (Standard treatment group): this group will receive the scheduled protocol in the isolation hospital. Interventional: this group will follow the protocol of Alcohol inhalation.
Recruitment status	Enrolling by invitation
	Patient volunteered to take part in the study, approved combination of asprin and alcohol treatment, and provided informed writen consent and if the patient is critically ill so the consent will be signed by a relative from the first degree. Patient must meet criteria for confirmation of novel coronavirus infection and criteria for each method.

Table 1: Research design and methods.

Materials and Methods

Study outcomes

Primary outcome:

Clinical recovery time (TTCR) (Time Frame: Not more than 14 days).

TTCR is defined as the study treatment (Ethyl alcohol inhalation combined with asprin) began to fever, breathing rate, blood oxygen saturation recovery, and cough relieving for at least 48 hours.

The time of SARS-CoV2 overcasting (Time Frame: not more than 10 days) Time of SARS-CoV2 in upper respiratory tract specimens overcasting detected by RT-PCR.

Improvement of PaO2/FiO2 ratio.

Secondary outcome:

Decrease hospital stay of COVID-19 positive patients.

Decrease mortality rate of COVID-19 positive patients.

Decrease severity and complications of the disease.

Decrease rate of transferring the patients from normal word to IMCU or ICU.

Patients

Written Informed consent will be taken from patients with fully conscious level and the person responsible for decision making on behalf of the patient in ICU.

Eligability criteria:

Ages Eligible for Study: 21-75 years old.

Sexes Eligible for Study: Both

Accepts Healthy Volunteers: No

Ethyl alcohol protocol

Inclusion criteria:

Confirmed COVID-19 positive by PCR test.

Typical NCCT chest for COVID-19 (CORAD 5)

Admitted to quarantine hospital and under close monitoring.

Early stage of COVID-19 infection.

Respiratory symptoms and other symptoms indicating COVID-19 infection.

Age ≥ 21

Able to give informed consent.

Exclusion criteria:

"Allergy" or history of a serious adverse reaction to alcohol.

Pregnancy

Asthmatic patients

Impaired kidney function (Creatinine>2.5 times than normal limit), impaired liver function or diagnosis of end organ failure.

Patient diagnosed with chronic bronchopneumopathy

History of epilepsy

History of alcoholism

Treatment with drugs that administered concomitantly with ethanol can cause the so called "Disulfiran like effect" like metronidazole, levamisole, nitrofurantoin, isoniazid and griseofulvin.

RESULTS

Suggested pre-treatment evaluation

Vital signs

Labs: pre-treatment labs are necessary for follow up (CBC, ABG, CRP, D dimer, Serum ferritin, LDH and pro calcitonin level).

Baseline pulse oximetry

CXR (or CT chest)

Monitoring of clinical efficacy

Attention to the patient's arterial oxygen saturation and supplemental oxygen requirements with continuous pulse oximetry throughout the duration of the patient's inpatient stay is recommended.

Dosing and administration of nebulized 70% ethyl alcohol

Dose: Each daily nebulized dose is weight based

Females: 0.31 grams per actual kg of weight.

Males: 0.33 grams per actual kg of body weight.

Each dose may be diluted 1/3 with normal saline (to decrease mild "burning" sensation in the nasopharynx and throat).

Schedule: One treatment per day x 3-5 days, by continuous nebulization over 45-60 minutes.

Depending on the volume size of the nebulizer chamber, repetitive filling of the chamber may be required to receive the total daily dose over the specified time of 45-60 minutes.

Delivery system: Nebulizer machine and mask which covers nose and mouth. The patient should take slow, deep breaths. To decrease the risk of aerosolization of the virus, a viral filter should be used on the expiration port of the mask.

Prevention of dehydration: Per physician decision, adequate intravenous crystalloid fluids should be considered, or p.o. hydration with not less than 2000 cc (about 70 oz) per day of treatment with water, or other non-caffeinated fluid of choice, as Ethanol tends to dehydrate, during the course of the 3 days of treatments.

Side effects and adverse effects

The patient should report to the prescribing physician any side or adverse effects during treatment with ethanol (Table 2).

Prompet methods followed by health care workers	
Materials	We use 40% conc. Dripping on gauze at room temperature.
Technique	Drip 1-2 ml of alcohol 40% on gauze. Cover your nostril with gauze (point where you drip the alcohol). Slowly and carefully inhale the vapor and if one of your nostrils has narrowing, block the other one. After a few seconds, the smell of ethanol will disappear, and then stop.
Investigations (Pre)	CBC, CRP on the first day of work.
Consedration	This method works well for the front part of the nasal cavity. There is a risk of inflammation due to high alcohol conc, but we have to decide comparing with the risk from the corona virus itself. This method is only suggested for use by medical professionals and is not considered appropriate for use by the general public.

evaluation	CBC, CRP on Day 1-7.

Table 2: Prompet method for health care workers.

Consent

If the patient meets all indications for ethanol inhalation treatment for COVID-19 infection, and has no absolute contraindications, and the benefit outweighs the risk of treatment, consider discussing the following points with the patient:

Ethanol is known to kill certain viruses, and is used in hand sanitizers. Ethanol has been used in the 1950s for treatment of other diseases (i.e. pulmonary edema, etc.), and is still used for intravenous use for some poisonings.

Ethnaol has not been used to date to treat COVID-19 infections but there is reason to believe it may work to help kill the virus in the human body, and thus prevent complications of COVID-19 infection.

The Ethanol given in this treatment is "pure" grain alcohol, the same as in wine, whiskey, beer, etc. But in a much higher concentration than normal "spirits".

The Ethanol will be inhaled through a mask like other nebulized breathing treatments. The suggested regimen is one treatment per day for a total of 3-5 days. The amount in each nebulized treatment is determined by weight. In most cases, the amount of Ethanol in each dose per treatment is equivalent to the Ethanol present in 1 to 4 glasses of wine.

Inhaled Ethanol may cause mild intoxication ("tipsy") to some degree, and may cause a mild "hangover" later. There are possible other side effects or adverse events which are difficult to predict, but are most likely easily treatable, and correctable.

It is suggested the patient sign a Consent Form to receive this treatment, which should include:

Why this treatment is being offered.

That the patient desires to try this treatment, and accepts any risks, including but not limited to any adverse events;

That the patient may at any point decide not to receive any further treatments. If so, that the patient will be treated with standard treatments and care for COVID-19 infection.

That the patient has asked any and all questions they have, which have been answered to their satisfaction.

If the patient is agreeable to treatment, proceed with #4 below.

Conclusion

With the help of the results obtained, we were able to recognize the severity of the disease using ethyl alcohol inhalation along with aspirin during the early stages of detection of COVID-19 infection. We were able to find out the Clinical recovery time, and the decrease in patients hospital stay, mortality rate and severity. With a few side effects the components have shown high efficiency in the overall treatment.

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