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Review in SARS-Corona Virus (Types, Infection, Diagnosis, Chemical Antiseptics for This Virus)

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Abstrac:*This review conversed about types of corona virus ,diagnosis ,causes of infection, its spread , solutions to prevent the spread of virus ,then the issue of infection control by Corona Virus via using Chemical Antiseptics and its types., antiseptic is a substance that kills corona virus and works to stop their growth, applied to the skin or mucous membranes to prevent infection. Antiseptics (which are antigens that kill microorganisms) or inhibit their growth on living tissues without causing harmful effects when applied to body surfaces or exposed tissues. Disinfectant (these disinfectants are placed on non-life objects) and materials such as: machines and surfaces to control and prevent infection.*

Keywords: *Cov.19, sars corona virus19, social problem, Corona Virus*

I. Introduction

The SARS-2 virus belongs to a large family of viruses called Corona Virus, which is a positive, single-chain virus. Other coronaviruses can cause diseases ranging from the common cold to more serious illnesses such as MERS. The SARS-2 virus is the seventh avian influenza virus that is known to infect humans, after (229E, NL63, OC43, HKU1, Coronavirus and the original SARS virus)[1-3].

The transmission of the SARS-2 virus between humans (human to human) was confirmed during the outbreak of the 2019-2020 virus. The transmission occurs mainly through respiratory droplets from coughing and sneezing in a field of about two meters (6 feet). Indirect contact via contaminated surfaces is another possible cause of infection. Initial research suggests that the virus can survive on plastic or iron for up to three days, but it does not survive on cardboard for more than one day or on copper for more than four hours, and its activity is inhibited with soap With the virus.If the virus is contagious during the incubation period is still not certain, then on 1 February 2020 the World Health Organization stated that "transmission of the virus from individuals who do not have

symptoms is likely not a major factor in transmission." However, an epidemiological model for the onset of the outbreak in China suggested that "transmission of the virus[4-10]before symptoms appear can be typical and common among documented infections" and that asymptomatic infection can be the cause of most infections.

Corona viruses cause a large proportion of common cold cases in adults and children. Coronavirus causes colds with major symptoms, such as fever and swollen appendages, especially in people in winter and early spring. Corona pneumonia viruses may cause viral pneumonia either directly or secondary with bacterial pneumonia. It may also cause bronchitis, whether viral bronchitis directly or secondary to bacterial bronchitis. The spread of the Human Coronavirus in 2003 was the Coronavirus associated with severe acute respiratory syndrome (the Corona virus associated with SARS syndrome), which causes severe acute respiratory syndrome (SARS), and has a unique pathogenic potential, there are seven strains of Human Coronavirus[11-17] :

1. Corona Human Virus 229E (HCoV-229E).
2. Corona Human Virus OC43 (HCoV-OC43).
3. Corona syndrome virus (SARS-CoV).
4. SK NL63 (HCoV-NL63).
5. SKU1 human virus.
6. Corona Virus Associated with Middle East Respiratory Syndrome (MERS-CoV), formerly known as New Corona Virus 2012 (HCoV-EMC).
7. Corona Emerging Virus (2019-nCoV), known as Wuhan pneumonia or Wuhan Corona virus. (newly discovered)

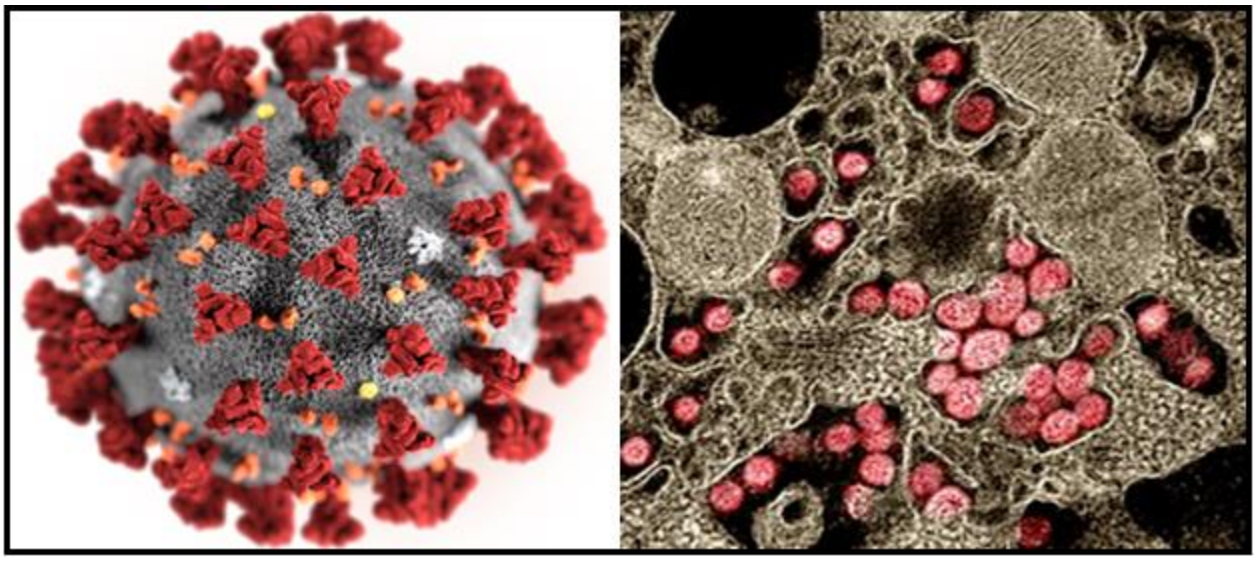

Fig. (1): Corona Virus

While Corona HCoV-229E, NL63, -C43 and HKU1 viruses are circulating in humans, causing respiratory infections in adults and children around the world.In 2003, following the outbreak of severe acute respiratory syndrome (SARS) that began the previous year in Asia, and secondary cases elsewhere in the world, the World Health Organization (WHO) issued a press release stating that a new coronavirus had been identified[18-22] in a number of laboratories. It is the causative agent of SARS. The virus was officially named after the SKS virus (SARS-CoV). More than 8,000 people were injured, and about 10% of them died.

In September 2012, a new type of coronavirus was identified, called the Corona Virus 2012, and it is now officially known as the Coronavirus associated with Middle East Respiratory Syndrome (MERS-CoV). Despite this, on May 12, 2013, the French Ministry of Social Affairs and Health confirmed a case of human-to-human transmission in France. In addition, the Tunisian Ministry of Health (Medina) reported cases of human-to-human transmission. The two confirmed cases are related to people who appeared to have contracted the disease from their

father, who had contracted the disease after visiting (Qatar and Saudi Arabia). Despite this, the virus does not seem to be transmitted easily from person to person, as most infected individuals do not transmit the virus. As of October 30, 2013, there were (124 cases) and (52 deaths) in Saudi Arabia.The Dutch Erasmus Medical Center identified the sequence of the virus's genome, and then gave the virus a new name, the human immunodeficiency virus Corona associated with the Erasmus Medical[23-30] Center (HCoV-EMC). The last name of the virus is Coronavirus associated with Middle East Respiratory Syndrome (MERS-CoV). In May 2014, only two cases of coronavirus infection were registered in the United States, both of whom were health care workers who had worked in Saudi Arabia and then traveled to the United States. One was treated in Indiana and the other in Florida. Each of these individuals was taken to hospital temporarily and then discharged , In May 2015, infection with the Coronavirus spread in South Korea, when a man traveling to the Middle East visited 4 different hospitals in the Seoul area to treat his illness. This caused one of the largest outbreaks of coronavirus associated with Middle East Respiratory Syndrome (MERS-CoV) outside the Middle East region. As of December 2019, 2,488 cases of coronavirus associated with Middle East Respiratory Syndrome (MERS-CoV) have been confirmed in laboratory tests, 851 of them were fatal, and the death rate is around 34.5%.

Corona Virus (Co V 2019):

In December 2019, pneumonia was reported in Wuhan, China. On December 31, 2019, the outbreak was attributed to a new strain of corona viruses, officially named by the World Health Organization 2019- nCoV.
By March 6, 2020, 3,383 confirmed deaths and more than 98,372 confirmed cases had been reported. Wuhan strain was defined as a new strain of Corona beta virus from group 2B with a genetic similarity of ~ 70% with SARS virus. The virus was believed to be the origin of the virus, but many prominent researchers disagreed with this belief. The virus is 96% similar to corona virus, so it is widely believed to be of bat origin.

The virus was first discovered in Wuhan, central China, in December 2019. It is believed to have originated in wild animals and has spread to humans by mixing infected animals during wildlife trade operations in wet markets. The virus then spread to other Chinese provinces in early and mid-January 2020 due to the Chinese New Year holidays. Infected cases have started to appear in other countries, due to the transmission of the disease through international travel[31-36]

Symptoms of the infection:

The affected person may be asymptomatic or may develop clinical symptoms such as fever, cough, shortness of breath, fatigue, and muscle pain. The WHO review of 55,924 laboratory-confirmed cases in China indicated the following typical symptoms and signs: fever (87.9%), dry cough (67.7%), fatigue (38.1%), expectoration production (33.4%), and shortness of breath (18.6%) Sore throat (13.9%), headache (13.6%), muscle or joint pain (14.8%), chills (11.4%), nausea and vomiting (5.0%), nasal congestion (4.8%), diarrhea (3.7%), Hemoptysis (0.9%), conjunctival hyperemia (0.8%).The development of the disease may then lead to severe pneumonia, acute respiratory distress syndrome, sepsis (septicemia), septic shock, and death. Some patients may be asymptomatic, that is, the results of the examination confirm the infection but they do not show symptoms, so researchers advise to monitor individuals who are in contact with patients confirmed their injury and exclude the injury.The incubation period (the period between injury and the onset of symptoms) ranges from (one day to 14 days), but in most cases the incubation period was (five days). However, one case was recorded with an incubation period of 27 days[37-42]

II. Diagnosis

The WHO has published multiple test protocols for the SARS-CoV-2 virus, which causes coronavirus 2019. The test uses a serial polymerase reaction for instantaneous reverse transcription (rRT-PCR). The test can be performed on respiratory or blood samples. Results are available within a few hours to days.

A person is considered to be at risk of contracting Covid-19 if he has traveled to an area of continuous community transition during the past forty days or if he has been in close contact with an infected person. Common main indicators include fever, cough, and shortness of breath. Other possible indications include fatigue, muscle pain, loss of appetite, sputum production and sore throat. And research by scientists in Singapore concluded that successfully killing the virus is possible by cleaning the most used surfaces, such as toilet seats and washbasins, twice daily and cleaning the land daily with sterilization liquid. The research was conducted on patients infected with the emerging coronavirus, who contaminated their rooms and toilets with a high degree, and after cleaning them, it was found that the measures taken to sterilize the surfaces proved successful as long as people committed to them., list of *Disinfectants for Use Against SARS- Corona Virus (CoV-2)*[43-50]:

1. Clorox multi service
2. Clorox desinvaktinibs
3. Clorox Commercial Solutions
4. Lesol Brand Heavy Duty Cleaner
5. Lesol Disinfect Max Cover Mist
6. Lesol Brand Clean and Fresh Complete Service Cleaner
7. Pure Professional Servas Disinfection and EBS
8. Sunny Prime Gourmsdale Spray

Fig. (2): Special sterilizers against Corona virus

III. Solutions and Proposal To Prevent The Spread of Viruses

There are a few solutions around how to reducing of corona virus spread via The Chemical Sterilization, before proceeding with sterilization chemicals, consider whether there is a more appropriate method than chemical sterilization, where chemical sterilization is used only with tools that are damaged by heat at high costs of applying the "one-time use" unilateral use of these tools. Equipment and tools can be sterilized by dipping them in a chemical solution, leaving them for a while and then rinsing with sterile water. The immersion period continues for an appropriate time, depending on the type of material used for sterilization, in order to result in killing (bacterial spores)[51-55] . Unlike steam sterilizers, the biomarker is not available for most chemicals used for sterilization ,and when these restrictions are taken into account, it is preferable to use these substances for high level disinfection:

Per-acetic Acid

A per-acetic solution of 0.2 - 0.35% concentration is used for ten minutes to sterilize instruments that are affected by high temperatures (such as arthroscopes and dental equipment). One of the most important advantages of per-acetic acid is that its analyzed products are harmless and very few deposits. And the preserved per-acetic acid is effective in the presence of organic matter and it also eliminates bacterial spores (bacterial vesicles) even under a low temperature. This acid causes corrosion of red and yellow copper, bronze, steel, and galvanized iron, but these effects can be reduced by adding some materials. This acid is unstable if it is diluted.Per-acetic acid is superior to formaldehyde solution in its ability to penetrate organic matter. This acid also causes corrosion of materials, and therefore it is prohibited to use it in its natural state as a disinfectant unless there is an anticorrosive substance in its composition. Neosidex is a solution containing per-acetic acid with anticorrosive substance. And sterilization using per-acetic acid: This process may be done using an automatic reprocessing device in order to reduce the concentration of per-acetic acid from 35% to 0.2% so that it is suitable for use. This method can be used if the

device to be sterilized can be immersed in the liquid. Filtered water is used as a liquid to immerse the device to be sterilized. There are connectors for each type of device being reprocessed. The system is used to sterilize both flexible and rigid endoscopes.

Ethylene Oxide Gas

Ethylene oxide gas is used to sterilize most instruments that can withstand temperatures between 50-60 ° C. However, caution should be used when using it due to its high toxicity and explosion strength. In spite of its multiple use and suitability to sterilize equipment that are vulnerable to heat, fluids, rubber products, etc., it is necessary to leave the equipment exposed to air for a long time before its distribution to get rid of the residual gas effects: the operating cycle period ranges from (2 – 24) hours and this process is considered relatively expensive. Test sterilization using ethylene oxide gas by experimenting with this spore on bacterial spores (bacterial vesicles).

Alcohol

Alcohol is effective against influenza virus (252). Ethyl alcohol (70%) is a powerful broad spectrum germicide and is considered generally superior to isopropyl alcohol. Alcohol is often used to disinfect small surfaces (e.g. rubber stoppers of multiple-dose medication vials, and thermometers) and occasionally external surfaces of equipment (e.g. stethoscopes and ventilators). Since alcohol is flammable, limit its use as a surface disinfectant to small surface-areas and use it in well-ventilated spaces only. Prolonged and repeated use of alcohol as a disinfectant can also cause discoloration, swelling, hardening and cracking of rubber and certain plastics[56-62].

Fig.(3): Alcohols for Sterilization

Foam solution of Iodine polypedone

(Iodine polyvidone) foam solution uses a concentration of (4% or 7.5%) in cleansing healthy skin, contaminated wounds, and the location of surgery, along with hand-washing for disinfection and sterilization of hands for surgery. Taking into account the possible interactions between different groups of disinfectants, materials from the same group should be used for cleaning and disinfection. For example, to prepare the preoperative skin, iodine polyfoamide foam solution is used for cleaning, then a 10% iodine polyvidone leather solution is used for disinfection.

Fig.(4):Types of Chemical Sterilization

Sterilization devices

Medical equipment and surgical tools are among the tools that lead to the transmission of infection upon reuse, unless these machines, tools and surfaces are thoroughly cleaned, disinfected, and sterilized, which we provide sterilizing tools, detergents, and sterilization equipment to get rid of germs, viruses, and fungi on the device surfaces Medical, to ensure the health and safety of the patient and the medical facility and make it a healthy environment suitable for treatment.Autoclave devices are designed in a modern way that guarantees reliable operation and high technological features. The reason behind its success is a team of multidisciplinary engineers, who have developed sterilization equipment according to OEM requirements for major manufacturers in the world for more than 20 years. The bowl is a fully enclosed double-encapsulated square compartment, made of corrosion-resistant 316L stainless steel, which complies with the PED directive. Autoclave structure and tubes are also made of stainless steel. Highly efficient technical insulation materials do not release any particles; therefore, Azteca A sterilizers can be used under clean room conditions. The advanced insulation technology increases the energy efficiency of sterilizing units., The autoclave sterilizer can be equipped with either 1 or 2 vertical pneumatic sliding doors.The automatic vertical sliding door movement stops immediately if it becomes blocked and returns to the open position. Special safety features prevent the door from opening when the compartment is under pressure or when the temperature is high.

Fig.(5): Autoclave sterilizer- Azteca A

Azteca A sterilizers use steam under pressure as a sterilization agent for encapsulated and uncoated instruments, such as fabrics, surgical instruments, utensils, and other materials that are stable to heat and moisture at temperatures ranging from 121 ° C to 134 ° C. The units can be equipped with internal steam generators in order to obtain faster turns with efficient energy consumption, and to reduce dependence on external steam source and steam quality.The air removal process is carried out by a powerful suction system, using a liquid circular pump and an intense heat exchanger. All autoclaves are standard equipped with a water saving system to reduce the amount of water used during sterilization cycles.Within health care services, sterilization of medical supplies is a key issue against the progression of many infectious diseases. In order to improve the quality of this product, international standards that define equipment requirements and procedures have been followed in the sterilization departments of healthcare facilities. Celitron's Azteca A sterilizers provide the best solution for central sterilizers in hospitals and clinics, and can also be used in the pharmaceutical and biotechnology[63-67] fields.

Disinfection of Hands and floors with surfaces

Aseptic solution for floors and surfaces 1 is applied without washing. To extend and how to prepare, you must follow the manufacturer's directions., After cleaning with detergent (detergent without antibacterial agent) and washing with water, an active chlorine solution of 0.1% is applied[68-72].

Fig.(6): Disinfection of Hands

Cleaning and preliminary washing is necessary, chlorine effectiveness decreases in the presence of organic materials, and the detergent used may be incompatible with chlorine., The contact time is 15 minutes. Stainless steel surfaces should be washed with water after sterilization with chlorine solution.

Ways to Spread the Corona Virus

The Corona virus can be transmitted from the infected person to others through the following: Air through coughing , sneezing, Personal contact like touching or shaking hands, Touching contaminated surfaces then touching the mouth, nose, or eyes before washing hands. Fecal contamination, which is rare[73-79].

Fig.(7): Disinfection of floors with surfaces

IV. Recommendations

There are currently no vaccines to protect against infection with the Corona virus, but the risk of infection can be reduced by doing the following Many suggestions may contribute forward to reducing corona virus spread :

1. Washing the nose with saline solution (saline drop to avoid infection and prevent virus entry).
2. Disinfection of floors and surfaces.
3. Wearing paws and gags
4. Not leaving the house too often.
5. Use tissue paper when sneezing.
6. Avoid crowds and crowded places.
7. Wash hands frequently after touching things.
8. Avoid shaking, kissing, and walking away one and a half meters when talking to anyone
9. Block flights
10. The affected person stays at home so that he does not spread the infection to others.
11. Cover your mouth and nose with a tissue when you cough or sneeze, then throw it in the trash and wash your hands.
12. Surface cleaning and disinfection. Follow hygiene measures, including washing hands regularly before and after touching animals, and avoid contact with sick animals.
13. Avoid consuming raw or uncooked animal products, including milk and meat, because consuming them increases the chance of infection, and for camel milk and meat it can be eaten but after pasteurization, cooking, or other thermal treatments.
14. Passenger screening to avoid infection

Fig.(8):Passenger screening to avoid infection

Fig.(9):Quarantine for injured patients

Fig.(10): Cover the entire face to prevent infection

Fig. (11): Washing by saline drop to decrease infection and virus entry

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