ABSTRACT :

In early December 2019, an outbreak of coronavirus disease 2019 (COVID-19), caused by a novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), occurred in Wuhan City, Hubei Province, China. On January 30, 2020 the World Health Organization declared the outbreak as a Public Health Emergency of International Concern. As of February 14, 2020, 49,053 laboratory-confirmed and 1,381 deaths have been reported globally. Perceived risk of acquiring disease has led many governments to institute a variety of control measures. We conducted a literature review of publicly available information to sum-marize knowledge about the pathogen and the current epidemic. In this literature review, the causative agent, pathogenesis and immune responses, epidemiology, diagnosis, treatment and management of the disease, control and preventions strategies are all reviewed.

DIAGNOSIS :

Efforts to control spread of COVID-19, institute quarantine and isolation measures, and appropriately clinically manage patients all require useful screening and diagnostic tools. While SARS-CoV-2 is spreading, other respiratory infections may be more common in a local community. The WHO has released a guideline on case surveillance of COVID-19 on January 31, 2020. For a person who meets certain criteria, WHO recommends to first screen for more common causes of respiratory illness given the season and location. If a negative result is found, the sample should be sent to referral laboratory for SARS-CoV-2 detection. Case definitions can vary by country and will evolve over time as the epidemiological circumstances change in a given location. In China, a confirmed case from January 15, 2020 required an epidemiological linkage to Wuhan within 2 weeks and clinical features such as fever, pneumonia, and low white blood cell count. On January 18,2020 the epidemiological criterion was expanded to include con-tact with anyone who had been in Wuhan in the past 2 weeks. Later, the case definitions removed the epidemiological linkage. The WHO has put forward case definitions. Suspected cases of COVID-19 are persons a with severe acute respiratory infections(history of fever and cough requiring admission to hospital) and with no other aetiology that fully explains the clinical presentation and a history of travel to or residence in China during the 14 days prior to symptom onset; or b a patient with any acute respiratory illness and at least one of the following during the 14 days prior to symptom onset: contact with a confirmed or probable case ofSARS-CoV-2 infection or worked in or attended a health care facility where patients with confirmed or probable SARS-CoV-2 acute respiratory disease patients were being treated. Probable cases are those for whom testing for SARS-CoV-2 is inconclusive or who test positive using a pan-coronavirus assay and without laboratory evidence of other respiratory pathogens. A confirmed case is one with a laboratory confirmation of SARS-CoV-2 infection, irrespective of clinical signs and symptoms

CLINICAL MANIFESTATION :

Clinical manifestations of 2019-nCoV infection have similarities with SARS-CoV where the most common symptoms include fever, dry cough, dyspnoea, chest pain, fatigue and myalgia. Less common symptoms include headache, dizziness, abdominal pain, diarrhoea, nausea, and vomiting. Based on the report of the first 425 confirmed cases in Wuhan, the common symptoms include fever, dry cough, myalgia and fatigue with less common are sputum production, headache, haemoptysis, abdominal pain, and diarrhoea. Approximately 75% patients had bilateral pneumonia. Different from SARS-CoV and MERS-CoV infections, however, is that very few COVID-19 patients show prominent upper respiratory tract signs and symptoms such as rhinorrhoea, sneezing, or sore throat, suggesting that the virus might have greater preference for infecting the lower respiratory tract. Pregnant and non-pregnant women have similar characteristics. The common clinical presentation of 2019-nCoV infection are presented in Table. Severe complications such as hypoxaemia, acute ARDS, arrythmia, shock, acute cardiac injury, and acute kidney injury have been reported among COVID-19 patients. A study among 99 patients found that approximately 17% patients developed ARDS and, among them, 11%diedofmultiple organ failure. The median duration from first symptoms.

COVID 19 – SOUNDS TAXONOMY :

The new Information and Communication Technologies (ICT) support fighting against COVID-19 in several directions, and it included attempts at analysis towards:

1. Classification of COVID-19 symptoms with abnormal respiratory patterns.
2. Diagnosis and treatment for COVID-19 by using ML and DL technique.
3. Identification of COVID-19 symptoms with cough data through mobile application.
4. Crowd-sourced respiratory sound data to the diagnosis of COVID-19.
5. COVID-19 detection with cough using "COUGHVID" crowdsourcing dataset.
6. Correlation analysis of COVID-19 sounds with MFCC method.
7. Diagnosis of COVID-19 by analyzing pulmonary voice vocal fold oscillations.
8. AI for detection of COVID-19 with respiratory cough sound.
9. Biomarkers framework for Detection of COVID-19 with speech-production subsystems.
10. Speech analysis under COVID-19 with parameters.

The taxonomy of respiratory COVID-19 sounds from crowdsourced datasets is depicted, and we have collected datasets related to COVID-19 respiratory sounds (voice, cough, breath) from crowdsourcing datasets and data-driven techniques such as Artificial Intelligence Machine Learning and Deep Learning techniques to diagnose COVID19 disease. These techniques and methods help to detect the COVID-19 symptoms from the crowdsourced respiratory sound data. We can detect the COVID-19 positive case symptoms with cough sound, screening of a patient breath with speech results, and an Artificial Intelligence (AI) machine can sense COVID-19 symptoms from continuous speech and mental health situation.

RISK FACTORS :

Fewer COVID-19 cases have been reported in children less than 15 years. In a study of 425 COVID-19 patients in Wuhan, published on January 29, there were no cases in children under 15 years of age. Nevertheless, 28 paediatric patients have been reported by January 2020. The clinical features of infected paediatric patients vary, but most have had mild symptoms with no fever or pneumonia, and have a good prognosis. Another study found that although a child had radiological ground glass lung opacities, the patient was asymptomatic. In summary, children might be less likely to be infected or, if infected, present milder manifestations than adults; therefore, it is possible that their parents will not seek out treatment leading.

CONTROL AND PREVENTION :

However, a study is needed to elucidate whether any intermediate hosts have facilitated the transmission of the virus to humans. Bats are unlikely to be the animal that is directly responsible for transmission of the virus to humans for several reasons there were various non-aquatic animals (including mammals) available for purchase in Huanan Seafood Wholesale Market but no bats were sold or found;SARS-CoV-2 and its close relatives, bat-SL-CoVZC45 and bat-SL-CoVZXC21, have a relatively long branch (sequence identity of less than 90%), suggesting those viruses are not direct ancestors of SARS-CoV-2; and in other coronaviruses where bat is the natural reservoir such as SARS-CoV and MERS-CoV, other animals have acted as the intermediate host (civets and possibly camels, respectively). Never the less, bats do not always need an intermediary host to transmit viruses to humans. For example, Nipah virus in Bangladesh is transmitted through bats shedding into raw date palm sap.

CONCLUSION :

The current COVID-19 pandemic is clearly an international public health problem.There have been rapid advances in what we know about the pathogen, how it infects cells and causes disease, and clinical characteristics of disease. Due to rapid transmission, countries around the world should increase attention into disease surveillance systems and scale up country readiness and response operations including establishing rapid response teams and improving the capacity of the national laboratory system.

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