EDITORIAL

The Covid-19, Epidemiology, Clinic and Prevention

Alessandro Antonelli[1,*], Giusy Elia[1], Silvia Martina Ferrari[1], Rudy Foddis[2], Salvatore De Marco[3], Alfonso Cristaudo[2] and Poupak Fallahi[2]

[1]Department of Clinical and Experimental Medicine, University of Pisa, Pisa, Italy; [2]Department of Translational Research and New Technologies in Medicine and Surgery, University of Pisa, Pisa, Italy; [3]U.O. 5th Medicine, AOUP, Pisa, Italy

1. BACKGROUND

In December 2019, a cluster of pneumonia cases, due to a newly identified β-coronavirus, occurred in Wuhan, China (Covid-19, or SARS-CoV-2). This was a zoonotic coronavirus breakout, that allowing human-to-human transmission, raised global health concerns [1]. On 26 February 2020, the rate of new cases begin to decline in China, but the tendency changed outside China, where new cases occurred, such as in Italy, South Korea, and Iran; and for the first time the number of new cases outside China surmounted those reported in China [2]. After China, Italy had the second largest number of Covid-19 case-fatality rate [3]. Unfortunately, the infection spread also to all other European countries. Covid-19 is also spreading in US, mainly a high concentration in New York City, with a higher fatality rate. Other countries such as Iran, Turkey, Canada, South Korea, Brazil, Israel, have also unfortunately experienced a large spread of the infection. African countries are at particular risk because of the density of the communities and insufficient diagnostic and therapeutic capacities [4]. According to the European Centre for Disease Prevention and Control (ECDC), since December 31, 2019 and as of April 3, 2020, >1 000 000 cases of Covid-19 have been reported, including 51,515 deaths, and the number is increasing every day.

2. VIROLOGY

SARS-CoV-2 is strictly related to SARS-CoV [5]. It is believed to have a zoonotic origin. Coronavirus genetically clusters with the genus Betacoronavirus, in subgenus Sarbecovirus (lineage B), together with two bat-derived strains. At the whole genome level, it is 96% identical to other bat coronavirus samples (BatCov RaTG13) [6, 7]. Similar to other viruses, SARS-CoV-2 infects lung alveolar epithelial cells through receptor-mediated endocytosis *via* the angiotensin-converting enzyme II (ACE2) as an entry receptor [4]. Also, the DPP4 receptor is implicated in viral entry [8].

3. TRANSMISSION

The disease is believed to spread mainly with close contacts (within 1 to 2 meters), and through small droplets originating by people during sneeze, cough, or talk [9]. The contagion can also occur by first touching a contaminated surface and then touching eyes, nose, or mouth [9]. The virus survives for hours to days on surfaces [10, 11]. The aerosol dispersion is also responsible for diffusion of the disease. Virus spread may happen before symptoms appear, however if people are symptomatic, the virus is most contagious [12]. As stated by the ECDC, it is still not known the ease of spreading of this disease; generally, one person is able to infect from two to three others [10].

4. CLINIC OF COVID-19

Within the subset of patients admitted to hospital, the most common symptoms at onset of illness were fever (90-98%), cough (70-80%), dyspnoea (60-50%) and myalgia or fatigue (40-50%). Notably, 20-30% of patients had upper respiratory tract symptoms such as coryza, or gastrointestinal symptoms such as nausea, vomiting, and diarrhoea. Other clinical features included sputum production, headache (8%) and haemoptysis. The median time from onset of symptoms to first hospital admission was 4-8 days. About 20-30% required intensive treatment unit (ITU) admission for respiratory support:70-80% of patients are male and 30-50% had pre-existing comorbidities, such as hypertension (15-25%), diabetes (20-25%), obesity, and cardiovascular diseases (10-15%), or Chronic obstructive pulmonary disease (COPD). Laboratory features include leukopenia (20-40%), lymphopenia (20-45%) and raised aspartate aminotransferase (40%). Abnormalities on computed tomography (CT) of the chest were seen in all patients [13].

5. DIAGNOSIS

Two risk factors for Covid-19 are: having traveled to an area with community infection in the 14 preceding days, or having had tight relationships with infected people.

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