PREVENTION AND SCREENING FOR COVID 19 INFECTIOUS DISEASE IN THE CONDITIONS OF GENERAL PRACTICE

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ABSTRACT

SARS-CoV-2 is the name of a new strain of coronavirus that was first reported in Wuhan City, the Chinese province of Hubei, in the middle of December 2019. The new viral disease has spread at an alarming rate worldwide, despite extreme anti-epidemic measures and strategies taken by many countries to limit the pandemic. Various activities of active and passive screening in the General practice have implemented to constrain the transamination of coronavirus infection. They involve a series of actions for informing and education of patients, early identification of suspected cases and management of patient with viral infection. To date, there is no approved vaccine or specific antiviral treatment available for COVID- 19. Further research is needed to understand in detail the life cycle of SARS-CoV-2, to detect the original source of the virus, to establish the mechanisms of transmission, as well as to develop effective methods for prevention of the onset of an infectious process and adequate treatment. It is necessary to be presented reliable scientific evidence that will contribute to more effective and quality screening in the General Practice. In this moment, all protective measures in the General medicine's office need to be focused on providing better protection for healthcare professionals and patients.

Key words: coronavirus disease, prevention, screening, General practice

INTRODUCTION

The outbreak of a new 'mysterious' virus named 2019-novel coronavirus (2019-nCoV) in China has raised alarm bells among health officials the world over as number of people infected and the resultant death toll continues to rise, reported by Rawat M. Coronaviruses are a large family of viruses that cause illness ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV). A 2019-nCoV (SARS-CoV-2) is a new strain that has not been previously identified in humans. This new 2019-nCoV causes similar symptoms to SARS-CoV and MERS-CoV and people infected with these coronaviruses suffer a

severe inflammatory response. It can be transmitted in all areas, regardless of temperature or weather by inhalation of contaminated aerosols entering the air, by close contact or by virus transfer from the hands to the mucosae of the nose or eyes. To date, investigations are still under way to assess the full extent of the COVID - 19 pandemic. Based on information provided by national authorities, WHO recommendations on public health measures and surveillance of new coronaviruses continue to apply in Bulgaria. The standard recommendations to prevent infection spread are an integral part of the introduced screening for COVID 19 viral disease in the conditions of General practice.

GOAL

It includes to present an actual information about prevention and screening methods for COVID-19 infectious disease in the conditions of General practice, and in particular for the Bulgarian clinics providing primary outpatient health care.

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MATERIALS AND METHODS

It was performed an analysis of articles and reports of local and foreign experts, data from independent surveys, current scientific publications, recommendations of the World Health Organization, Centers for Disease Control and Prevention, European Center for Disease Prevention and Control, National Health ministries and guidelines of medical departments and associations of family physicians.

DISCUSSION AND RESULTS

On 31 December 2019, the WHO China Country Office was informed of cases of pneumonia of unknown etiology detected in Wuhan City, Hubei Province of China. The clinical signs and symptoms of the patients reported in this cluster are mainly fever, with a few cases having difficulty in breathing, and chest radiographs showing invasive pneumonic infiltrates in both lungs. One week later, Chinese authorities reported in the media that the cause of this viral pneumonia was initially identified as a new type of coronavirus, which is different from any other human coronaviruses discovered so far. According to the information from the World health organization seven human coronaviruses (HCoVs) have now been identified: HCoV-229E, HCoV-OC43, HCoV-NL63, HCoV-HKU1, SARS-COV, which causes severe acute respiratory syndrome, MERS-COV, which is responsible for the development of Middle East respiratory syndrome and SARS-CoV-2. Typically, HCoV infection follows a seasonal pattern similar to that of influenza, with the exception of HCoV-NL63. Coronaviruses are from the family Coronaviruses with single-stranded RNA. The electron microscopic image reveals the crown shape structural details for which the coronavirus was named. For reasons yet to be explained, some viruses can cross species barriers and can cause diseases of varying severity in humans. Both SARS and MERS are classified as zoonotic viral diseases. They primarily infect the upper respiratory and gastrointestinal tract of mammals and birds. In the animal host, the virus had acquired a series of genetic mutations that allowed it to infect and multiply inside humans, as well as subsequent human-to-human transamination. Field studies have revealed that the original source of SARS-CoV and MERS-CoV is the bat, and dromedary camels and the Himalayan palm civets play the role of intermediate hosts.

The dynamics of a novel virus are currently unknown. The World Health Organization does not yet have verified data on the mechanism of transmission of the virus. Most suggestions defend the thesis that the contamination of the infection is analogous to SARS by the airborne transmission route, by touching and close contact. This new virus was initially named 2019-nCoV and the disease as coronavirus disease 2019 (COVID-19) by WHO. In genetic terms, the genome of the new HCoV had a significantly high percentage of nucleotide identity with bat SARS-like-CoVZXC21 and with that of human SARS-CoV. The Coronavirus Study Group (CSG) of the International Committee on Taxonomy of Viruses termed it the SARS-CoV-2 virus on the basis of a phylogenetic analysis of related coronaviruses. Unfortunately, the inadequate and uncertain knowledge on virus transmission has inevitably hindered development of effective mitigation policies and resulted in unstoppable propagation of the COVID-19 pandemic. SARS-CoV-2 infection was classified as a category B infectious disease legally but was managed as a category A infectious disease by the Chinese government. In EU/EEA countries with available data, 30% of diagnosed COVID-19 cases were hospitalized and 4% had severe illness. Clinical presentations of COVID-19 range from asymptomatic to severe pneumonia, respiratory failure, additional organ complications and death. There is no evidence to date that SARS-CoV-2 will display marked winter seasonality, such as other human coronaviruses in the northern hemisphere, which emphasizes the importance of implementing anti-epidemic measures. It is paramount to apply infection management practices by controlling infection source, blocking transmission route, and protecting susceptible populations. The unprecedented flurry of activity by WHO and other global public health bodies has mainly focused on preventing transmission, infection control measures, and screening of travelers and suspect cases. General practitioners play an important role in supporting the response to suspected cases of COVID -19. General practice settings are being requested to conduct passive and active screening. These two types of screening methods in the General practice include anti-epidemic measures and approaches, which are part of the recommendations of the CDC and WHO for

prevention of viral infection. Passive screening involves a following series of activities:

- signage at points of entry to the General medicine's office and at reception areas for patients with symptoms to self-identify,
- keeping a distance of 1,5 - 2 meters,
- wearing a procedure mask,
- avoiding close contact with people who are sick,
- protection the most vulnerable groups and avoiding public and social gatherings
- regularly washing hands with soap and water for at least 20 seconds and drying hands thoroughly,
- using a 60% or greater alcohol-based hand sanitizer,
- cleaning and disinfecting frequently touched objects and surfaces with a sanitizer,
- avoiding touching eyes, nose and mouth with unwashed hands,
- always following the instructions of national or local health authorities,
- practicing social distancing and refraining from kissing, hugging, touching, handshaking,
- seeking medical attention in the presence of difficulty breathing and a high fever.

When it comes to human-to-human transmission of the viruses, often it happens when someone comes into contact with the infected person's secretions. Depending on how virulent the virus is, a cough, sneeze or handshake could cause exposure. The infection can also be transmitted by touching an object or surface containing the virus and then touching a mouth, nose or eyes before washing hands. The latest scientific studies report that the airborne transmission route is highly virulent and dominant for the spread of COVID-19. As with other respiratory pathogens, including influenza and rhinovirus, the transmission is believed to occur through respiratory droplets, but it is also possible in case of protracted exposure to elevated aerosol concentrations in closed spaces. It requires wearing of face masks in public corresponds. In contrast to China, wearing of face masks was not mandated and was unpopular in most of the western world during the early outbreak of the pandemic. The analysis of Zhang R. and co-authors reveals that this protective measure represents the determinant in shaping the trends of the pandemic and the use of mandated face covering significantly reduces the number of infections. Healthcare workers caring for patients are obligated to utilize contact and airborne precautions. The

recommended physical separation for social distancing is beneficial to prevent direct contact transmission. Disadvantage of practicing a social distance of 1.5-2 meters is the impossibility to provide effective and safe protection against inhalation of virus-bearing aerosols due to rapid air mixing. Furthermore, pre- and asymptomatic individuals may contribute to up 80% of COVID-19 spread. Because of the opportunity of transmission before manifestation of symptoms, and thus individuals who remain asymptomatic could transmit the virus, isolation is the best way to contain this epidemic.

Many asymptomatic people infected with COVID-19 show mild symptoms, especially during the first stages of the disease. Thus, it is possible to catch the disease from an infected person who only has a mere cough and does not feel ill. Illness reports from COVID-19 patients range from infected individuals with little or no symptoms to those who are severely ill and those who have died. Older adults and people with underlying health conditions like heart disease, diabetes, arterial hypertension, lung disease and other respiratory ailments, immunosuppressed persons appear to be at a greater risk for developing severe illness. It requires active and continuous monitoring of the indicated target groups for the manifestation of COVID-19 symptoms, as well as mandatory recommendations for limiting social contacts and outdoor meetings.

In the context of General practice, active screening includes established standard rules for the management of viral infection. The main task is the early identification of suspected patients with coronavirus infection. Clinical symptoms and signs, which can be detected by the general practitioner on the first contact with the patient through telephone consultation or "face to face" are dry cough, irritation and constant coughing without expectoration (expelling any mucus), fever with or without elevated body temperature, high fever with increased temperature more than 37.3 Celsius degrees, headache, tiredness, loss of energy to perform normal tasks, dyspnea, tachypnea, myalgia, sore throat, nasal congestion, changed sense of smell, changed sense of taste, loss of appetite, diarrhea, abdominal pain, nausea or vomiting, problems with arterial blood pressure. According to the recommendations of National association of general practitioners in Bulgaria, any case without a positive epidemiological history is

considered a suspicious for COVID-19 infection, in the presence of the following clinical signs: coughing, dyspnea, sore throat, nasal congestion, and change in sense of smell, change in sense of taste with or without raised temperature. The most important recommendations in General practice for management of Bulgarian patients, who are suspected of COVID-19 infection, are:

- to refer the patient for a serological test in the first 1-2 days after the onset of complaints.
- in asymptomatic patients with a positive epidemiological history, a serological test is also recommended.
- subsequent referral of the patient for PCR test is performed according to the results of the serological test.
- any case in which a PCR test has confirmed SARS-CoV-2 infection is termed as a proven case.

Active screening is aimed at any patient visiting a family doctor with flu-like complaints after traveling to countries or regions at high epidemic risk of 2019-nCoV, or having contact with persons who have returned from specified destinations and outbreaks of infection or after direct contact with citizens who are carriers of the virus. In the conditions of General practice, it is necessary to carry out medical consultation and physical examination, as well as subsequent clinical assessment of the suspected individuals in strict compliance with sanitary and hygiene requirements. The presence of manifested symptoms of an acute respiratory infection after direct medical or telephone consultation determines the need for immediate referral to local public health services, diagnostic testing and providing a safe transport of the patient with a severe clinical manifestation to hospital and medical clinics that are adapted for the treatment of coronavirus disease. Therefore, preventive strategies are focused on the isolation of patients and careful infection control, including appropriate measures to be adopted during the diagnosis and the provision of clinical care to an infected patient. According to the order of Bulgaria's Health Minister contact persons should be subjected to mandatory 14 days quarantine and COVID-19 patients should be treated in specialist clinics.

Currently, there is no vaccine to prevent COVID-19 infection, nor is there a specific recommended treatment. Supportive care to relieve symptoms is suggested. We are eyewitnesses of the enormous scope and

magnitude of the COVID-19 outbreak reflecting not only a highly contagious nature of novel virus, but also exceedingly efficient transmission for SARS-CoV-2. There is always a risk of infection and it increases under the influence of stress, immobility, chronic diseases, unhealthy nutrition, and the accumulation of large groups of people in small spaces. Globalization and international travel inevitably lead to the globalization of viruses and bacteria and humanity pays the price and, as it has paid and will pay the price of all the advantages of civilization.

CONCLUSION

Outbreaks of novel virus infections among people are always of public health concern. From the first reported case in December, in Hubei province, the Wuhan coronavirus has spread to all regions of the world within three to four months. The risk from COVID-19 outbreaks depends on characteristics of the virus, including whether and how well it spreads between people, the severity of resulting illness, and the medical or other measures available to control the impact of the virus as a vaccine or treatment medications. Preventive activities are the current strategy to limit the spread of cases. Various methods of active and passive screening in the General practice have been implemented to fight the coronavirus disease 2019 (COVID-19) pandemic, including application of personal protective equipment to reduce the risk of further virus transmission, as well as patient education and management. The dynamics in the development of the pandemic presupposes frequent modifications in the knowledge, which requires periodic updating of diagnostic and therapeutic concepts and strategies, as well as of preventive epidemiological measures and screening methods. Therefore, the presented material cannot claim absolute completeness due to the lack of sufficient, statistically detailed, official information about the situation in our country and in the world.

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