

COMMUNICABLE DISEASE PROFILES

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SEVERE ACUTE RESPIRATORY SYNDROME (SARS)

Severe Acute Respiratory Syndrome (SARS) is a new, severe, and poorly understood infectious disease that has been described in patients in many countries in the world, including Canada. SARS is the first major new infectious disease of the 21st century and has taken full advantage of the opportunities for rapid international spread afforded by a closely interconnected and highly mobile society. Since mid-February 2003, the World Health Organization (WHO) has reported the occurrence of the disease in 26 countries. This report summarizes the preliminary information available on SARS as of May 1, 2003.

Epidemiology

This epidemic apparently started in Guangdong Province in Southern China in November last year. Several cases have occurred in travelers to this area. But since mid-February, when the first patient in Hong Kong fell fatally ill with non-typical pneumonia that was later identified as a previously unrecognized infection, SARS has spread to a total of 26 countries, including Canada.

As of May 1, 2003, a cumulative total of 5,865 probable cases with 391 deaths have been reported to the WHO from 26 countries. Of these cases, China has reported a cumulative total of 3,638 probable cases with 170 deaths, thus accounting for more cases than the rest of the world combined.

In Canada, as of May 1, 2003, Health Canada has received reports of 348 cases (149 probable and 199 suspect) of SARS from 6 affected provinces (Alberta, British Columbia, New Brunswick, Ontario, Prince Edward Island, and Saskatchewan). Ontario has reported 264 cumulative cases (145 probable and 119 suspect). Of the total cumulative cases, 88 are health care workers. There have been 23 deaths in Canada, all of them having occurred in Ontario. A total of 171 persons have been discharged from hospitals in Ontario. To date, transmission has been limited to specific transmission settings such as households, hospitals, and specific community settings.

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Clinical Presentation

According to information from various researchers around the world, the illness begins generally with a prodrome of fever (>38.0°C), sometimes associated with chills and rigors, and might be

accompanied by other symptoms, including headache, malaise, and myalgia. Typically, rash and neurologic or gastrointestinal findings are absent; however, some patients have reported diarrhea during the febrile prodrome.

At the onset of illness, some persons have mild respiratory symptoms but after 3 - 7 days, a lower respiratory phase begins with the onset of a dry, nonproductive cough and dyspnea, which might be accompanied by or progress to hypoxemia. In 10-20% of cases, the respiratory illness is severe enough to require intubation and mechanical ventilation.

Chest x-rays might be normal during the febrile prodrome and throughout the course of illness. However, in a substantial proportion of patients, the respiratory phase is characterized by abnormalities on chest radiographs.

Laboratory abnormalities include lymphopenia, mild leukopenia, mild thrombocytopenia, elevations in serum creatine phosphokinase levels and hepatic transaminase concentrations. In the majority of patients, renal function has remained normal.

Prognosis

Reports from WHO indicate that patients fall into one of two groups. The majority of patients (80 to 90 per cent) at day 6 or 7 show improvement in signs and symptoms. A second smaller group progress to a more severe form of SARS, many of whom develop acute respiratory distress syndrome (ARDS) and require mechanical ventilatory support. Mortality in the severe group appears to be linked to a patient's co-morbid factors. Generally, patients over 40 with other illnesses are more likely to progress to the severe form of the disease. The case-fatality rate among persons with illness meeting the current WHO case definition of SARS varies widely and is anywhere from 3% to 10%.

Etiology

Some studies suggest that the primary agent of SARS seems to be a novel coronavirus, not closely related to coronavirus types that cause

the common cold. The US Centres for Disease Control (CDC) scientists were the first to link the novel virus to SARS, and other laboratories soon confirmed this finding. While some researchers - Canadians included - still doubt the etiology of SARS, international opinion seems to have concluded that SARS is caused by this new coronavirus named: "SARS Coronavirus (or SARS-CoV)". It should be noted that Human metapneumovirus (a paramyxovirus) has been isolated in some outbreaks, including the Canadian one. Chlamydia has also been reported in some SARS patients in China. It is not clear what the role of these other pathogens is but it is speculated that they may act as opportunistic secondary invaders that increase the disease progression.

Mode of Transmission

Transmission of SARS mainly occurs through close personal contact with an infected person. This is assumed to be by droplets or by direct or indirect contact, but airborne and fecal-oral transmission have not been ruled out.

Incubation Period

According to WHO, the incubation period for SARS is typically 2-10 days.

Laboratory Diagnosis

At present, since the causative agent for SARS remains elusive, no validated specific diagnostic test exists for detection of SARS. The WHO is currently working with eleven reference laboratories worldwide to identify the cause of SARS.

Several new laboratory tests can be used to detect SARS-CoV if it is indeed the causative agent: Serologic testing for coronavirus antibody can be performed by using indirect fluorescent antibody or enzyme-linked immunosorbent assays that are specific for antibody produced after infection. Although some patients have detectable SARS-CoV antibody during the acute phase (i.e., within 14 days of illness onset), definitive interpretation of negative SARS-CoV antibody tests is possible only for specimens obtained >21 days after onset of symptoms. A reverse transcriptase polymerase chain reaction (RT-PCR) test specific for viral RNA has been positive within the first 10 days after onset of fever in specimens from some SARS patients, but the duration of detectable viremia or viral shedding is unknown. RT-PCR testing can detect SARS-CoV in clinical specimens, including serum, stool, and nasal secretions. Finally, viral culture and isolation have both been used to detect SARS-CoV. Absence of SARS-CoV antibody in serum obtained <21 days



after illness onset, a negative PCR test, or a negative viral culture does not exclude SARS-CoV infection.

In the absence of a reliable diagnostic test, decisions concerning what constitutes both a suspect and a probable case of SARS will continue to be based on the present clinical and epidemiological case definition.

Treatment

At present, the most efficacious treatment regimen for SARS, if any, is unknown. The most appropriate management measures are general supportive therapy, ensuring the person is hydrated and treated for subsequent infections. Empiric therapy includes coverage for organisms associated with any community-acquired pneumonia of unclear etiology, including agents with activity against both typical and atypical respiratory pathogens. Treatment choices may be influenced by severity of the illness. Infectious disease consultation is recommended.

As of April 27, 2003, Health Canada has withdrawn the use of ribavirin for the routine treatment of SARS, and the drug will be available only for use as part of clinical trials. Physicians have been notified that the continued access to the drug is contingent upon the submission and review of data in the possession of physicians with respect to the use, safety, and efficacy of ribavirin for the treatment of SARS. Physicians currently treating patients with ribavirin are also strongly advised to critically re-examine the risk/benefit for each patient before continuing treatment.

Prevention and Control

On March 26, 2003 the Premier of Ontario declared a Provincial Emergency under the *Emergency Plans Act (Emergency Management Act - as of April 15, 2003)* due to "A Health Emergency Related to Severe Acute Respiratory Syndrome (SARS)". It quickly became apparent that extraordinary measures would be required in Ontario to protect public health, given rising numbers of probable and suspect infected persons and some recorded deaths. Since then, the provincial gov-

ernment and health care providers are taking steps to contain the spread of SARS and to make sure people who have been exposed are safely isolated where they can be cared for.

Assessment Clinics have been set up in affected areas. They assess and screen those people who are concerned that they may have been exposed to SARS, but not those people who have already been diagnosed. Clinic staff will ensure that people who have been exposed are safely isolated and cared for in an environment that will help contain the spread of SARS.

All suspect and probable SARS cases are placed in isolation and managed according to strict procedures of infection control. Health Canada and Ontario's Ministry of Health and Long-Term Care have issued and circulated to various stakeholders a number of guidelines for this purpose. Besides, the Ontario government has been proactive in communications, ensuring that the entire Canadian - and indeed world - community is fully kept abreast of SARS developments in the province on a daily basis.

Health Canada has recommended that travelers avoid specific geographical areas in South East Asia except for essential business. Given the uncertainties of the current situation, Health Canada believes it is prudent to await the outcome of national and international control measures before undertaking travel to these destinations. Persons who are travelling or have traveled to these areas are required to monitor their health for 10 days following their departure from these areas. Canadian travelers are advised to continually monitor the latest Health Canada's travel advisories.

Acknowledgement

The management of the emergency has required large-scale cooperation/coordination at all government levels (federal, provincial and municipal), across multiple sectors (including the public/private) and the application of recommended measures such as isolation and quarantine. Everybody's contribution is duly acknowledged and highly appreciated.

Sources: [Edited] WHO, Health Canada, CDC (Atlanta), ProMED-mail, and MOHLTC.

HUMAN FATALITY DUE TO AVIAN INFLUENZA IN THE NETHERLANDS

Outbreaks of a highly pathogenic strain of avian influenza virus A (H7N7) have been reported in various poultry farms in both the Netherlands and Belgium this year.



While avian influenza strains normally infect exclusively poultry, Dutch authorities have reported that the H7N7 strain has now jumped the species barrier, causing one death and more than 80 cases of mild disease in humans. A 57 year-old veterinarian who visited a poultry farm affected by the H7N7 strain died on 17 Apr 2003 of acute respiratory distress syndrome in the Netherlands. Many diagnostic tests were done and only the H7N7 virus was isolated from the patient.

Since the H7N7 outbreak began in the Netherlands in late February, there have been 83 confirmed cases of human H7N7. Most of these cases (79) exhibited conjunctivitis, and 13 of them displayed mild influenza-like illness. 3 family members of 2 poultry workers have also fallen ill with a minor respiratory disease, suggesting a possible chain of human-to-human transmission. To date, no co-infections with H7N7 and human influenza A viruses have been detected.

Protective measures in humans that are in close contact with infected animals (vaccination against human influenza and prophylactic treatment with antivirals) and culling of affected poultry and pigs are being implemented to control this outbreak.

Before the current reports, avian influenza virus (H5N1 strain) had crossed species to affect humans in Hong Kong in 1997 and mid-February 2003, causing infection in 20 people with 7 deaths altogether.

Based on available evidence, WHO concludes that the death is an isolated case, as no efficient human-to-human transmission of the avian H7N7 influenza virus strain has been detected. The WHO Global Influenza Surveillance Network is currently assembling a test kit for H7N7 that will be ready for use soon. As a precautionary measure, the network is also working on the development of a vaccine for H7N7.

Source: ProMED-mail [edited]

SEXUALLY TRANSMITTED INFECTIONS: A CLINICAL UPDATE

A one-day conference titled *Sexually Transmitted Infections: A Clinical Update* will be held at the University of Guelph on Monday, June 16, 2003. This conference is offered as part of the 25th Anniversary Guelph Sexuality Conference, in partnership with the Ontario Sexual Health Network. The Ontario Ministry of Health and Long-Term Care has provided financial support for the program.

The program will provide registrants an opportunity to enhance their clinical practice with leading-edge updates on the diagnosis, treatment and management of patients with Sexually Transmitted Infections. The program is designed for physicians and nurses working in family/general practice, health unit and walk-in-clinics, sexual assault centres, university and college health services and emergency rooms.

For further information and on-line registration please visit the following website: www.open.uoguelph.ca/sexconf.

Source: DCS