February 2003 was a turning point in the world’s public health history. A new virus emerged in southeast Asian countries, specifically, in the southern Chinese province of Guangdong.

In the United States, television networks and national and local newspapers announced that the World Health Organization (WHO) had received reports of more than 150 patients who had severe acute respiratory illness associated with pneumonia. By March 2003, it was evident that most cases of severe acute respiratory syndrome (SARS) were originating in China, Hong Kong, Vietnam, Singapore, Indonesia, and the Philippines.

The World Health Organization’s investigation into this viral pneumonia led to the development of a case definition for SARS. A coronavirus was identified as the etiologic agent responsible, which was confirmed by a SARS study group in Hong Kong and by the Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia.

Statistics concerning SARS outbreaks are variable worldwide. Russia recently confirmed the case of a man in whom SARS was diagnosed living in the Amur River region, which forms a boundary with China, where hundreds have died from the disease.

Clearly, this new viral respiratory disease is contagious. Current epidemiologic data seem to suggest that SARS is spread by respiratory droplets and by both direct and indirect contact, without ruling out airborne spread.

Information regarding SARS continues to mount. Researchers in Hong Kong found evidence of the etiologic agent of SARS in cattle, pigs, rodents, dogs, and cats, including in a civet cat—considered a gastronomic delicacy in China. Although it is too early to base firm scientific conclusions on these findings, the new information is inclusive as well as challenging.

A recent investigation of 25 animals belonging to 8 species in a live animal market in Guangdong Province—believed to be where the SARS outbreak originated—revealed that six of the healthy-appearing animals tested positive for a SARS-like virus, a report that was confirmed by WHO. Other animal species (eg, raccoon dogs, a dog family native to eastern Asia) had the virus that causes SARS in their feces. Antibodies against the virus were also found in these dogs.

Genetic analysis of such animal viruses reveals that they are almost identical to the human virus believed to cause SARS, with one minor difference: The animal virus carries 29 extra amino acids. Should the animal strain of SARS be transmitted to a human, it is likely that the transmission occurred during preparation of a carcass for eating, as cooking would likely kill such viruses.

Currently, there is no treatment for SARS. Although the development of potential vaccines has been initiated by the National Institute of Allergy and Immunology (the virus can be grown in monkey cells), the menace of SARS is clearly present, and it is therefore critical to delineate the clinical presentation of SARS and the course of illness.

Severe acute respiratory syndrome is characterized by a prodromal phase. Typical presentation may begin with sudden onset of a high-grade fever accompanied by rigors and possibly headache and myalgia. Diarrhea and mild respiratory signs may be present. However, the latter symptoms may occur in the days after the initial presentation and may also include a nonproductive cough and dyspnea, which may be accompanied by hypoxemia.

Approximately 80% to 90% of patients with SARS have clinical improvement after 6 or 7 days. Approximately 10% of such patients have progressive respiratory failure, necessitating assisted ventilation, and 2% to 5% of such patients die. These fatalities have been associated with geriatric populations suffering from comorbid chronic conditions (eg, kidney disease, heart disease).

Laboratory findings associated with SARS are nonspecific and include leukopenia, thrombocytopenia, and abnormal results on liver function tests. High concentrations of creatinine phosphokinase are also reported. During the course of illness, chest radiograph may be normal but display patchy shadowing, which may later become confluent.

As no treatment is available for SARS, management of the disease should be symptomatic. Systemic corticosteroid use in patients with SARS is controversial. Although some investigators recommend that high-dose corticosteroids be given early to halt progression of the disease, others have concluded that early treatment with corticosteroids is not an acceptable standard of care in North America, as the coronavirus pneumonitis is believed to be the cause of SARS.

Precautions to prevent exposure to droplets should include having patients wear surgical masks and making the treatment of physicians, nurses, and others in contact with patients with SARS a priority. Respiratory isolation may be used, as to date there are no firm recommendations by WHO or the CDC to exclude such a protocol. Other care may include supporting fluid balance and gas exchange. As SARS is similar to other types of pneumonia, appropriate broad-spectrum antimicrobial therapy (eg, beta-Lactam, macrolide, fluoroquinolone) should be administered until a correct diagnosis is made or specific viral agent (eg, coronavirus) is identified.
The discovery of a novel coronavirus as the probable cause of SARS is alarming. Although scientific achievement in the understanding of the etiologic factors of SARS makes it appear that the disease is receiving full and ongoing attention, the truth is that the global SARS outbreak deserves increased attention from the CDC, WHO, and scientists the world over. Control of the SARS epidemic is a formidable challenge we must face vigorously in the months ahead. Physicians and other health care professionals are encouraged to suspect all cases of community-acquired pneumonia until a definitive diagnosis is made. Laboratory features such as lymphopenia, thrombocytopenia, and elevated lactate dehydrogenase levels are suggestive of possible case definition for SARS. Specimens should be sent to the CDC and other reference laboratories for viral identification and serologic analysis.

In treating patients with SARS, universal measures of precaution should be followed. Careful attention to hand washing or hand disinfection with an alcohol-based product is warranted. Wash hands before and after contact with patients and after removing gloves. Contaminated medical equipment should be disinfected as well. Disease management should be based on symptomatic treatment, and supportive care (eg, supplementary oxygen) should be given if the patient has hypoxemia. The antiviral drug ribavirin has been used extensively, though to date there are no clinical data confirming the efficacy of the drug in patients with SARS.

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Bibliography