



Severe Acute Respiratory Syndrome

Incidence

Since the initial identification of a new severe atypical pneumonia in the Guangdong Province of Southern China in November 2002 the number of confirmed cases continues to rise. It is estimated that SARS is fatal in approximately 4% of cases¹.

Aetiology

The causative organism of SARS remains unclear although there is increasing evidence that a new type of Human Coronavirus may be responsible. Virus particles with a distinctive crown-like halo have been seen on electromicroscopic examination of tissue specimens obtained from patients diagnosed with SARS and serological tests have confirmed recent infection with a Coronavirus². Genetic analysis of this new virus confirms that it is distinct from all known human pathogens, sharing only 60% of its RNA with other members of the Coronavirus family³. Whilst current research suggests that this newly identified virus may play a role in SARS there is at present no conclusive evidence that the agent is the sole cause and other organisms are still being investigated including the Human Metapneumovirus which may act as a co-pathogen.

Clinical Features

SARS most commonly affects the middle aged, with high fevers and malaise being the universal presenting features. Headache, myalgia, dizziness, dry cough

and breathlessness are all common symptoms although <30% of patients report a sore throat or runny nose. The incubation period ranges from 2 to 10 days. There is a lymphopenia in most cases and chest x-rays show a ground glass appearance predominantly in the lower zones. The lungs show the histological changes of ARDS with diffuse alveolar damage, hyaline membrane formation and mononuclear cell infiltrates.

Precautions for Staff

The virus is thought to be spread by droplets produced by coughing or sneezing but may be spread by fomites. There have been several reported cases of infection in healthcare workers caring for patients with SARS but it is thought that infection transmission pre-dates the use of adequate infection control procedures. It is recommended that staff employ standard protective equipment such as gown, gloves, eye protection, and masks (N95 Respirator)⁴. Good hand washing is also essential.

Vaccination

As yet there is no vaccine available against SARS. However effective animal vaccines against other strains of Coronavirus do exist making it likely that a human vaccine may be possible but this may take time. Researchers have also been able to block cellular uptake of the virus in vitro which may offer a therapeutic target in the future.

Treatment

The often rapid progression of the disease suggests that an abnormal or exaggerated immune response may be present and has led to the use of corticosteroids early in the disease⁵. Whilst non-specific some cases have shown good clinical response to the anti-viral Ribavarin. In addition broad-spectrum antibiotics have been used and usually include a macrolid for

cover against other atypical organisms⁶. Their role may be to prevent other opportunistic infection of the damaged lung. Although there have not yet been any reported cases of SARS being treated with ECMO our experience of treating other forms of severe atypical pneumonia (survival 57-100%)⁷ suggest that ECMO may be a useful adjunct in the management of this new condition.

1 Cumulative Number of Reported Probable Cases of Severe Acute Respiratory Syndrome (SARS) WHO statement www.who.int/csr/sars/country/2003_05_15/en/

2 Fact Sheet for Clinicians: Interpreting SARS test results from the CDC www.cdc.gov/ncidod/sars

3 Gerberding JL Faster...but Fast Enough? Responding to the Epidemic of Severe Acute Respiratory Syndrome www.nejm.org

4 Interim Domestic guidance for Management of Exposures to Severe Acute Respiratory Syndrome (SARS) for Health Care and Other institutional Settings CDC www.cdc.gov/ncidod/sars

5 LamW Severe Acute Respiratory Syndrome in Hong Kong www.rcpe.ac.uk/news/news.html

6 Tsang et al A Cluster of Cases of Severe Acute Respiratory Syndrome in Hong Kong www.nejm.org

7 Roberts et Al Venovenous ECMO for the patients Management of Adult Respiratory Failure: A Review of 200 consecutive patients. Abstract to ELSO Conference, Keystone, Colorado Feb 2002

Further information about CESAR is available at
www.cesar-trial.org