SEVERE ACUTE RESPIRATORY SYNDROME (SARS)

The first case of SARS illness was registered in Province Gvangdong in Chine, in November 2002. The first epidemic broke out in Singapur, in the middle of March 2003.

SARS – atypical pneumonia is caused by new *corona virus* called *SARS associated corona virus (SARS CoV). SARS CoV*- is isolated, its characteristics and connection with SARS are known, although there is possibility that some other pathogenic in certain cases can cause SARS.

SARS definition is based on the following criteria:

- **Clinical Criteria:**
  1. Asymptomatic or mild respiratory illness
  2. Moderate respiratory illness
     - Temperature of > 38^0 C, and
     - one or more clinical findings of respiratory illness (cough, shortness of breath, difficulty breathing) and
     - radiographic evidence of pneumonia, or
     - respiratory distress syndrome, or
     - autopsy findings consistent with pneumonia or respiratory distress syndrome without an identifiable cause

- **Epidemiologic Criteria:**
  1. Travel (including transit in an airport) within ten days of unset of symptoms to an area with current or previously documented of suspected community transmission of SARS
  2. Close contact within ten days of onset of symptoms with a person known or suspected to have SARS

- **Laboratory Criteria:**
  1. Confirmed
     - Detection of antibody to SARS – CoV in specimens obtained during acute illness or > 21 days after illness onset
     - Detection of SARS-CoV RNA by RT-PCR (reverse transcription-polymerase chain reaction test) or by second PCR assay
     - Isolation of SARS-CoV
  2. Negative
     - Absence of antibody to SARS-CoV in convalescent serum obtained > 21 days after symptom onset
  3. Undetermined
     - Laboratory testing either not performed or inclompete

Classification of Cases:

- Probable case: meets the clinical criteria for severe respiratory illness of unknown etiology and epidemiologic criteria for exposure, laboratory criteria-confirmed, negative, or undetermined
- Suspect case: meets the clinical criteria for moderate respiratory illness of unknown etiology and epidemiologic criteria for exposure, laboratory criteria - confirmed, negative, or undetermined

Preliminary Clinical Description of SARS

Severe acute respiratory syndrom is illness of unknown etiology that has been described in patients in Asia, North America and Europe.

Since March 21st 2003. the majority of patients identified as having SARS have been persons who were previously healthy and aged 25-70 years. Few suspected cases of SARS have been reported among children aged < 15 years.

The incubation period for SARS is typically 2-7 days, however according to isolated reports this period lasted for 10 days.

The illness beging generally with a prodrome of fever > 38^0 C. Fever is often high, sometimes is associated with chills and rigors, and might be accompanied by other symptoms, including headache, malaise and myalgia. At the onset of illness, some persons have mild respiratory symptoms. Rash, neurologic findings as well as gastrointestinal findings are absent. However, some patients have reported diarrhea during the febrile prodrome.

After 3-7 days, lower respiratory phase begins with the onset of a dry, nonproductive cough or dyspnea, which might be accompanied by or progess to hypoxemia. In 10-20% cases, the respiratory illness is severe enough to require intubation and mechanical ventilation. The case-fatality ratea among the persons who have SARS je is approximately 3%.

The severity of SARS illness is very variable – ranging from mild illness till illness to death.

Physical lung findings were normal for majority of patients having SARS, what was opposite to radiological changes.

Chest radiographs might be normal during febrile prodrome and throughout the course of illness, however in substantial proportion of patients, the respiratory phase is characterised by early focal interstitial infiltrates progressing to more gemeralized, patchy, interstitial infiltrates. Some chest radiographs from patients in the late stage of SARS also have shown areas of consolidation.

Early in the course of disease, the absolute lymphocyte amount is often decreased, while amount of white blood cells is generally normal or decreased. At the peak of respiratory illness, approximately 50% of patients have leukopenia and thrombocytopenia or low-normal platelet amount. In the early respiratory illness phase, elevated creatine phosphokinase levels (as high as 300 IU/l) and hepatic transaminases (2-6 times above the upper limits of normal). In the majority of patients, renal function has remained normal.

The illness developed differently with persons who were in close contact with patients with SARS. Some close contacts have reported mild illness, others have reported febrile illness without respiratory signs (suggesting the illness might not always progress to respiratory phase), while a few close contacts of patients with SARS have developed a similar illness.

EPIDEMIOLOGY: SARS is illness with high index of contagion. Ways of disease spreading are not completely defined, but based on previous experience we can say that the most common way of infection spreading is «drop» manner.

The following precautions are recommended in order to prevent spreading of infection: using of N-95 respirator, protective clothes and gloves, hand hygiene: hand washing before and after contact with patient.

DIAGNOSIS: Initial diagnostic testing for suspected SARS patients should include: chest radiograph, puls oximetry, blood cultures, sputum Gram`s stain and culture, testing for viral respiratory pathogens, notably influenza A and B and respiratory syncytial virus. Testing of specimen for Legionella and pneumococcal urinary antigen should also be taken into consideration.

If lungs radiographs do not show any changes, it is necessary to make CT of pectoral cage. Thus, changes can be noticed 1-2 days before they become visible by standard radiography.

TREATMENT: <u>The most efficient treatment regimen for the persons who have SARS is still unknown.</u>

In some cases, treatment regimens have included several antibiotics that simultaneously treat typical and atypical respiratory pathogenics (Levofloxacin or Ceftriaxon and macrolid), while in some cases therapy has also included antiviral agents (Oseltamivir or Ribavirin). Steroids have also been administered orally or intravenously to patients having ARDS, that have been mechanically ventilated, in combination with ribavirin and other antimicrobials.