

Name:
Group Nr.:

Date:

LABORATORY PROTOCOL Nr. 2 - RESPIRATORY INFECTIONS I.

Case report 1

6-years old boy comes to the pediatrician for sore throat and fever 38,7°C. Objective: enlarged tonsils with white spots (coverings)

Questions:

1. What is the suspected diagnosis?
2. Which laboratory examinations are indicated?

Laboratory examinations – results:

Direct Antigen (Ag) of *Streptococcus pyogenes* detection – positive

Throat swab - cultivation findings: Gray glossy colonies with a zone of beta-hemolysis

Questions:

3. Which agent is suspected?
4. Which test will be used for bacteria identification?
5. Which ATB will be used for therapy?
6. Is there any risk in inadequate or none infection therapy?

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Case report 2

70-years old woman, diabetic, smoker, comes to emergency for 2 days lasting fever, intermittent shivers, caught with expectoration of purulent sputum. Pectoral pain during breathing

Objective: fever 38.1°C, puls 103/min, breathing frequency 18/min, auscultation: weakened breathing on the right side

Lung RTG: shadow in right low lung lobe

Laboratory examinations – results: CRP 367 mg/l, blood count: 11 600 leucocytes with 77% of polymorphonuclears and 20% bars

Questions:

1. Which agents are suspected?
2. Which microbiologic examinations will be performed?
3. Which antibiotics will you choose for empiric therapy?

Microbiologic findings: Microscopy of sputum sample stained by Gram), Urine antigen of *Streptococcus pneumoniae* positive

4. What is the causative agent?
5. Describe and evaluate the findings of microscopic examination – the presence of cells, bacteria – is it a significant finding?
6. Which tests are used for identification of *Streptococcus pneumoniae*?
7. Which risk factors has the reported patient? Which risk factors make the patient more susceptible to mentioned pathogen?
8. Which antibiotics will be used after the results of ATB susceptibility testing ?
9. Which other illnesses can be caused by *Streptococcus pneumoniae*?
10. Which preventive regimen will you recommend to this patient?

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Case report 3

Mother with 6 weeks old infant comes to the pediatric emergency. The infant has got paroxysms of cough and the mother herself has suffered from the same type of cough already for more than 2 weeks.

Objective: during the paroxysm of cough in the emergency the infant is cyanotic and vomits, in the end of cough paroxysm apnoic pause occurred, Pulse: 160/min, breathing frequency 72/ min

Lung roetgenogram – without pathologic findings

Blood count: leucocytosis with lymphocytes predominance

Questions:

1. Which agent is suspected?
2. Which microbiologic examination will be performed? Which sample collection set will be used? Is it possible to perform indirect detection of this suspected agent?
3. What are the cultivation requirements of suspected agent?
4. After how long can the cultivation detection of suspected agent be positive?
5. Which antibiotic/group of antibiotics are the antibiotics of choice? Why?
6. Can this infection be specifically prevented?

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Case report 4

52-years old woman with rheumatoid arthritis is admitted to hospital for severe respiratory insufficiency with fever in suspected pneumonia, confused, intubation and artificial pulmonary ventilation is needed

Anamnesis: stay in hotel in Spain a week ago

Objective: fever 39,4°C, CRP 298 mg/l, higher liver enzymes levels and creatinin

Roentgenogram: bilateral shadow of lungs

Questions:

1. Which etiologic agents are suspected?
2. Which microbiologic examination will be performed?

Microbiologic findings:

Urine – antigen of *Streptococcus pneumoniae* a *Legionella pneumophila* not proved

BAL microscopy: microbes are not detected, leukocytes +++, cultivation of BAL

Haemocultures negativ

3. Which other examination can be performed?

Microbiologic findings:

BAL PCR examination: *Legionella pneumophila* DNA detected

Targeted cultivation, after 4 days *L. pneumophila* (séroskupina 2-12) colonies detected

4. Which conditions are necessary for legionella cultivation?
5. Explain why the legionella urine antigen was negative
6. What is the typical clinical picture in legionellosis?
7. Which ATB are suitable for targeted legionellosis therapy?
8. What is the route of transmission of legionella? What might be the source of infection in this case report?