

# Atypical pneumonia

'*Atypical pneumonias*' are pneumonias that characterize the mismatch between poor physical and extensive X-ray findings (large wedge-shaped infiltrates) with frequent pleural involvement. They are usually viral, chlamydial, mycoplasmal or pneumocystic.

"The term atypical pneumonia is currently considered obsolete and should not be used." It has previously been used to identify pneumonia caused by atypical agents, which is a mislabel, or is used by radiologists to identify pneumonia without a typical X-ray, or is used for unusual pneumonia that does not respond to ATB treatment. Currently the preferred division of pneumonias is for '*nosocomial*', '*community*', '*immunocompromised pneumonia*', '*pneumonia in social care institutions* 'and' ventilator pneumonia . ' .<sup>[1]</sup> Iron

## Viral pneumonias

### Ethiology

- Respiratory syncytial virus infection – mostly in the winter,
- parainfluenza in the autumn, winter and spring,
- flu in the winter,
- adenoviruses during the whole year

### Symptoms

Initially, HCD inflammation is often preceded by wheezing or stridor, cough, signs of difficulty breathing (grunting, alar joint). '*Physical findings*' similar to bacterial pneumonias - flu, shortness of breath. '*Laboratory tests*': leukocytes normal or slightly higher (this will not help to differentiate bacterial, but if the leukocytes were significantly elevated, viral inflammation would be unlikely). Severity, X-ray and physical examination do not reliably distinguish between viral and bacterial inflammation.

### Diagnosis

Rapid diagnostic tests to detect virus (eg fluorescent antibody test or ELISA test for RSV). '*Virus detection*' is important because it sometimes allows the use of a specific antiviral drug. Patients with adenoviral pneumonia may have severe necrotizing pneumonias with pneumothorax.

'*X-ray of the lungs*' - striped perihilar drawing, accentuated interstitial drawing, peribronchial infiltrates or dispersed bronchopneumonia (but there may also be allergic obscuration as in bacteria).

### Complications

Adenovirus pneumonia may be followed by *bronchiolitis obliterans* 'or' 'severe chronic respiratory failure' . *Airway hyperresponsiveness may develop after infection. They can subsequently be complicated by bacterial pneumonia.*

### Therapy

General supportive treatment as in bacterial, seriously ill patients should be hospitalized. Bacterial superinfection often cannot be completely ruled out, so the co-administration of ATB is indicated. For RSV - ribavirin, for influenza A and B - amantadine.

### Prevention and prognosis

Respiratory patients should be vaccinated against influenza A and B annually, children with suspected viral pneumonia should be isolated, and hands should be washed thoroughly. Most will heal without complications.

## Chlamydial pneumonias

They are recently becoming more often. They mainly affect infants aged 2-12 weeks. In newborns and infants are usually caused by *Chlamydia trachomatis* - chlamydia get to the baby from the mother during childbirth. In older children is common *Chlamydia pneumoniae* - transmission is droplet.

### Symptoms

Coughing, tachypnoea, conjunctivitis (but this one is not necessary!), auscultation - crackles, occasionally wheezing, the temperature does not have to be increased. Laboratory tests: eosinophilia, elevated IgM, IgG, IgA.

X-ray of the lungs - diffuse interstitial shading, hyperinflation, multiplication of the peribronchial pattern.

### Differential diagnosis

viruses, pneumocystis

### Therapy

Erythromycin or sulfisoxazole, treatment must last 14 days. Infants with severe respiratory distress, cough or apnea are hospitalized. Sometimes longer-term oxygen therapy is needed.

# Mycoplasma pneumonias

The causative agent is *Mycoplasma pneumoniae* (Eaton's agent). It causes pneumonia mainly in children over 5 years of age. It does not occur in infants under 6 months of age because they have maternal immunoglobulins. It is called "primary atypical pneumonia" - due to the discrepancy between a poor clinical finding and a large X-ray finding. Incubation period is long (2-3 weeks), the onset of problems is gradual.

## Symptoms

Fever (above 39° C), cough, headaches, nausea. At first the cough is dry, then the sputum production begins. There may be sore throat, otitis. Auscultation - wheezing, rhonchi, weakened or tube breathing. The disease is mild and is also called "walking pneumonia" (the patient walks with her).

## Diagnosis

Leukocytes and differential leukocyte count are usually normal. The diagnosis is supported by the titer of cold hemagglutinins (more than 1:64), as well as a four-fold increase in Ig titer against mycoplasma. Lung X-ray - interstitial shadowing or bronchopneumonic infiltrates, effusions are rare.

## Complications

Affects CNS, blood, skin, heart or joints (autoimmune hemolytic anemia, thrombocytopenia, syndrom Guillain-Barré, rash, ...).

## Therapy

Erythromycin for 7-10 days. Other macrolides (azithromycin and clarithromycin), tetracyclines are also effective.

## Prognosis

When there are no complications, the prognosis is excellent, sometimes it subsides spontaneously.

# Pneumocystic pneumonias

*Pneumocystis carinii* is an infection classified as a fungus (first described by the Pilsen pathologist Vaňek, in 1954). It often occurred in the post-war years in malnourished infants, in nursing homes and in low birth weight children.

Inflammation of the interstitium with a significant "enlargement of the interalveolar septum" (in which there are plasma cells and lymphocytes). There are foamy eosinophilic proteinaceous substances in the alveoli that contain cysts. The infection is transmitted by droplets, but it can also be obtained from rodents.

'Predisposing factors': prematurity, malnutrition, chemotherapy, malignancies, long-term treatment with corticosteroids, immunosuppression, anemia, hemophilia, nephrosis,...

## Symptoms

The onset is gradual, with non-specific manifestations (restlessness, loss of appetite), there is no cold, cough or fever, tachypnoea and cyanosis appear around the mouth. Severe dyspnoea, tachypnea (80-120 / min) and cyanosis occur within 1-2 weeks. Rhonchi can be heard on the lungs.

X-ray of the lungs - bilateral interstitial striated shadows based on dilated hils, pulmonary hyperinflation.

## Diagnosis

Definitive diagnosis by finding evidence of pneumocystis in the lung tissue or in the fluid of respiratory pathways (bronchoscopy, BAL, biopsy), or open lung biopsy or percutaneous lung puncture.

## Therapy

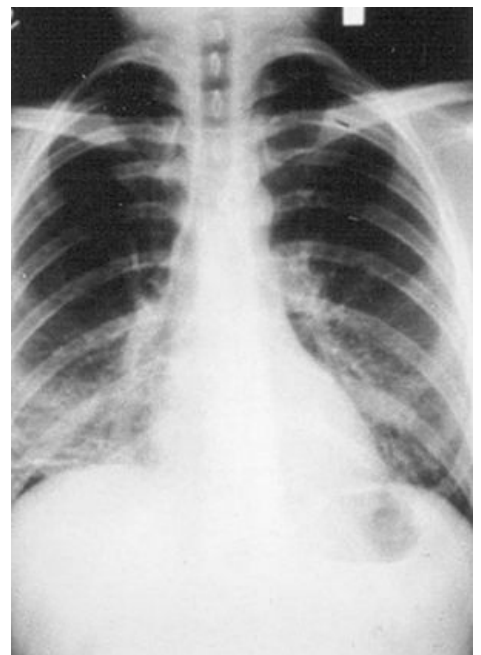
Most important remedy is pentamidine (4 mg/kg/den) i. v. or i. m. for 10 - 14 days (60-90 % of patients are cured). It has many side effects - renal dysfunction, hepatic dysfunction, anemia, thrombocytopenia, neutropenia, hypotension, hypoglycaemia, local reactions. Another important drug is cotrimoxazole which has fewer side effects and is just as effective.

## Prognosis

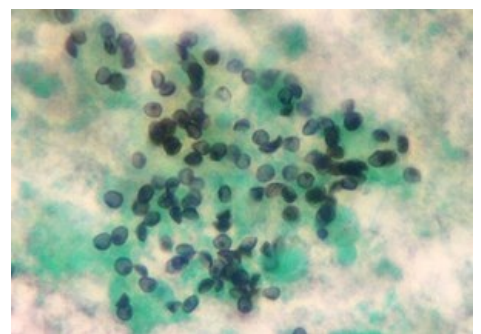
The disease lasts 4-6 weeks, and if not treated, the mortality rate is 25-50%. With proper treatment, 50-95% of patients survive.

## Prevention

Patients should be isolated from patients with impaired immunity, we perform prophylaxis with cotrimoxazole in endangered patients.



X-ray of pneumocystic pneumonia



Pneumocystis carinii in BAL

# Comparison table for typical and atypical pneumonia

PARAMETER	TYPICAL PNEUMONIA	ATYPICAL PNEUMONIA
Basic characteristics	significant physical finding	poor physical finding
Agents	(extracellular) <b><i>Streptococcus pneumoniae</i></b> , <i>Haemophilus influenzae</i> , <i>Haemophilus parainfluenzae</i> , <i>Staphylococcus aureus</i> , <i>Klebsiella pneumoniae</i> , <i>Escherichia coli</i> and <i>Pseudomonas aeruginosa</i>	(intra/paracellular) <b><i>Mycoplasma pneumoniae</i></b> , <i>Chlamydophila pneumoniae</i> , <i>Chlamydophila psittaci</i> , <i>Legionella pneumophila</i> , <i>Coxiella burnetii</i> , viruses – RSV, influenza, <i>Pneumocystis carinii</i>
Onset	sudden	after infection of upper respiratory tract, slow
Extrapulmonary symptoms	insignificant	usual – headaches, myalgia, vomiting, diarrhea
Fever	septic febrile	subfebrile
Shivering	yes	rarely
Cough	productive	dry, irritant
Heart rate	sometimes tachycardia	normal
Patient looks	ill	'normal'
Auscultation	crepitus, tracheal breathing, rhonchi	sporadic rhonchi
X-ray	segmental/lobar obscuration (alveolar involvement)	interstitial reticulonodulation (interstitial involvement)
Sedimentation	high	slightly increased
Inflammatory markers	high	slightly increased
Blood count	leukocytosis]]	lymfocytosis
Therapy	penicillins	macrolides

## Links

### Related articles

- Pneumonia • Pneumonia (pediatrics) • Pneumonia in newborns • Pneumonia in older children
- Bacterial pneumonia • abscess pneumonia • Aspiration pneumonia
- X-ray examination for inflammation of the lower respiratory tract • Clinical evaluation of pneumonia severity

### Sources

- ws:Atypické pneumonie
- BENEŠ, Jiří. *Studijní materiály* [online]. [cit. 2010]. <<http://jirben.wz.cz>>.

### References

1. ČEŠKA, Richard, et al. *Interna*. 1. edition. Triton, 2010. 855 pp. pp. 474-475. ISBN 978-80-7387-423-0.