



Atypical Pneumonia and COVID-19

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Short Communication

A 45-year-old patient, fully vaccinated against SARS-CoV-2, previously not chronically treated, was admitted to the Department of Internal Medicine with symptoms of upper respiratory tract infection persisting for seven days, with fever up to 38°C, dry cough, weakness and dyspnea, with a positive RT-PCR result for SARS-CoV-2 infection dated 4 days before the admission. On admission, the patient was in moderate-to-severe condition, conscious, verbally responsive, with marked respiratory effort and saturation of about 75% without oxygen therapy, whereas after passive oxygen therapy through a mask with an oxygen reservoir and oxygen flow of 15 l/min, the saturation level maintained at 92% to 94%. A CT pulmonary angiogram showed an approximate involvement of 70% of the pulmonary parenchyma, with ground-glass opacities typical of COVID-19, pulmonary embolism was excluded. In laboratory tests: Acute phase protein CRP-228 mg/l [N<5 mg/l], procalcitonin PCT 0.27 ng/ml [N<0.5 ng/ml], leukocytosis $8.12 \times 1000/\text{ul}$ [N 4-10 $\times 1000/\text{ul}$]. As a result of the applied treatment, on the 3rd day of hospitalization stabilization was achieved, followed by a gradual improvement of the general condition. A follow-up pulmonary computed tomography was performed, which showed an involvement of about 40% of the pulmonary parenchyma. The patient continued to require passive oxygen therapy, with a lower oxygen demand. However, due to persistent fever episodes, mainly in the evening, and elevated inflammatory parameters, the treatment was empirically supplemented with ceftriaxone administered intravenously at a dosage of 2 g every 24 h. A decrease in inflammatory parameters and improvement of arterial blood gas parameters were observed. On hospitalization day 14, the general condition deteriorated again, dyspnea at rest worsened and the patient required intensified passive oxygen therapy. Pulmonary computed tomography was performed again, which revealed involvement of approx. 60% of the pulmonary parenchyma. After analysis of the CT scans, the different nature of the radiological changes was noted. Apart from visible areas of consolidation of the pulmonary parenchyma, which could indicate either the evolution of previously described ground-glass lesions or bacterial super infection (ceftriaxone antibiotic therapy in progress) -interstitial inflammatory lesions were described, mainly within the lower lobe of the right lung. The radiological picture indicated a suspicion of pneumonia caused by atypical bacteria. Importantly, this type of lesion could be seen in lesser intensity already on the first computed tomography scan, but due to the extent of the lesions typical of COVID-19, it was largely masked and not so obvious. Only after the treatment and resolution of some of the radiological changes caused by SARS-CoV-2 infection, changes that could represent atypical pneumonia were better visible [1]. Material for serological tests was collected-blood for determination of antibodies against *Mycoplasma pneumoniae*, *Chlamydomphila pneumoniae* and CMV, and urine for determination of *Legionella* spp. antigen. The treatment was empirically supplemented with clarithromycin administered intravenously at a dosage of 500 mg every 12 h. A clear correlation was observed between the inclusion of macrolide and a visible improvement in the patient's general condition. The results of antibodies determination for *C. pneumoniae* IgG and IgM negative, against CMV-IgM negative, IgG positive, no *Legionella* spp. antigen was present in urine. Antibodies to *M. pneumoniae* IgM negative, IgG positive. Another *M. pneumoniae* antibody test was scheduled in about 14 days, but the patient was discharged from the hospital at his own request in good general condition.

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Despite a negative titer of IgM antibodies directed against *M. pneumoniae*, in this case we should consider the possibility of co-infection by this microorganism [2,3]. The first serological test for atypical infection was performed on day 19 after the first test for SARS-CoV-2 infection and on day 26 after the first symptoms of respiratory tract infection. In this interval, IgM antibody titre may already be negative and the analysis of the dynamics of IgG antibody accumulation is of diagnostic value.

The diagnosis of atypical pneumonia in a patient with viral pneumonia caused by SARS-CoV-2

infection can be challenging for the treating physician. In the era of COVID-19 pandemic and positive results of molecular tests, the physician's attention may focus on the diagnostically confirmed etiological agent of pneumonia-SARS-CoV-2 [4]. A careful analysis of the patient's condition in the course of the disease and consideration of another etiological agent on the basis of comparative diagnostic tests (CT) is very important. The ground-glass radiological changes on computed tomography, which are the characteristic image of COVID-19, often mask a parallel infection caused by atypical bacteria. The localization of lung lesions in atypical pneumonia may be considered as lesions corresponding to a viral infection. In addition, the clinical picture of both diseases partly overlaps, which only makes the correct diagnosis more difficult [1,4].

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