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Rapid progression of lung inflammatory infiltrates in SARS-CoV-2 infection in a young man

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A 37-year-old obese many with body mass index (BMI) 36.8 kg/m²(18.5-25) and any other concomitant diseases, smoking status negative, with a 6-days history of fever up to 38.5°C, cough, rhinitis, exertional dyspnea and fatigue. He reported close contact with SARS-CoV-2 infected person 10 days before.
At admission to hospital on March 15, 2020 patient was in good general condition, heart rate (HR) was 80/min, oxygen saturation (SO₂) 97%(96-99), body temperature 36.7°C, no dyspnea signs. His lungs were clear to auscultation. Chest radiograph was normal (A). Laboratory investigations revealed a white blood cell count (WBC) of 8.0x10³(4-10), C-reactive protein (CRP) 44 mg/l(0.0-6.0) and procalcitonin 0.062 ng/ml 0.00-0.06). Influenza has been excluded. RT-PCR test performed on the nasopharyngeal swab confirmed severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection.

On day-2 of hospitalization patient's dyspnea worsened, HR was 102/min, SO₂94%. The oxygen treatment was implemented, but the patient still reported dyspnea. Laboratory findings showed CRP elevation up to 66 mg/l, PO₂ 58 mmHg(65-100) in arterial blood gas test, WBC 7.04 x10³, lactate dehydrogenase 360 U/l(120-246). A repeated chest radiograph indicated bilateral consolidations in lower parts of lungs, recognized as pneumonia (B). The lopinavir/ritonavir treatment (400/100mg daily), ribavirin (1200mg daily) and ceftriaxone (2000mg daily) was introduced [1].

From day-5 to day-7, diarrhea (6 loose stools/day) appeared. On day-6, despite the treatment dyspnea was still present. CRP was 133 mg/l, WBC 11.5 x10³ and PO₂ 58 mmHg. Blood culture was negative. Next chest radiograph showed progression of abnormalities (C). There were consolidations in central part of right lung and bilateral consolidations in lower parts of lungs. Due to SO₂ 89% oxygen therapy was intensified. Azithromycin (500mg daily) was added.

After next two days fever, cough and dyspnea resolved and oxygen therapy was finished on day-10 of hospitalization. CRP decreased at 27 mg/l and PO₂ improved to 64 mmHg. On 31 MAR the nasopharyngeal swab for SARS-CoV-2 infection was done with negative result and patient was discharged from hospital.

**Discussion**

Despite current reports indicating that increased risk of severe SARS-CoV-2 disease course is observed mainly amongst the elderly with concomitant diseases, we present the case of COVID-19
in a young man, with no concomitant diseases other than obesity. Obesity is a factor worsening the course of viral respiratory tract infections, but until now a direct connection between obesity and a negative COVID-19 outcome was not proved [2].

No inflammatory infiltrates on the chest radiograph in the early course of the disease, with limited symptoms, as also pointed out by other authors, do not rule out rapid progression to severe disease. This might be the consequence of a lower sensitivity of chest radiograph compared to CT scan in revealing an early interstitial inflammatory infiltrates. Rapid progression of pneumonia accompanied by increased concentrations of lactate dehydrogenase and C-reactive protein might be observed also in otherwise healthy, young man [3][4].

Diarrhea might be a symptom of the SARS-CoV-2 disease, but also may be provoked by some drugs used in experimental treatment of the disease, like lopinavir [5].

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A. Normal lung radiograph (March 16, 2020)
B. Patchy and streaky consolidations in the right and left zones- inflammatory lesions (March 18, 2020).
C. Inflammatory infiltrates in the central (peripherally) and lower right lung. Probable consolidations in the lower left zone (March 21, 2020)