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Diagnosis of COVID-19 in a geriatric patient hospitalised for fall with initial misinterpreted aspiration pneumonia

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Background. SARS-CoV-2 is a virus which is more aggressive in aged patients with associated chronic age-related diseases. Although it is known that clinical picture of COVID-19 is already multifaceted, very little is still known about the infectious syndrome in aged patients. We present a case of an aged patient hospitalized for fall affected from COVID-19 pneumonia, initially misinterpreted for an aspiration pneumonia.

Case presentation. We describe the case of a 92 years patient with chronic heart diseases, hospitalized for fall complicated by head trauma. She was diagnosed with an aspiration pneumonia due to the fall so that she was put under antibiotics treatment. Despite four days of antibiotics treatment, the patient presented high fever and dry cough motivating in an epidemic period the nasopharyngeal PCR test for the research of SARS-CoV-2 which resulted positive.

Discussion and conclusions. Aspiration pneumonia resulting from a fall is a common finding in geriatric patients, that's why the diagnosis of COVID-19 was delayed. The geriatric population often have an altered clinical presentation of diseases, in particular regarding infectious diseases. The correct interpretation of some suspicious findings such as regular blood tests would have led more quickly to a diagnosis of non-aspiration pneumonia. Inflammatory markers and white blood cell count resulted within the normal range. Moreover, lymphopenia, considered as one of the biological [1]. The presence of confusion as a sign of persisting infection in an older patient should not be underestimated, expression of a possible involvement of nervous system in SARS-CoV-2 infection [2]. The common diagnosis of aspiration pneumonia in the geriatric field, the aspecific signs and symptoms of COVID-19 disease, the complex picture of our patient, prove that in geriatrics an apparently simple diagnosis could instead be insidious and complex.

Key words: COVID-19, SARS-CoV-2, age-related chronic diseases, fall, aspiration pneumonia, atypical illness presentation

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BACKGROUND

Epidemic studies demonstrate that age and poly-pathological antecedents are among the greatest risk factors for development of severe symptoms

in patients with COVID-19 [3] with consequent aggravation of the infection. Some studies [4] hypothesize that the immune system weakens as we age, with the risk of being more susceptible to infections. Patients with chronic age-related disease such as ischemic heart disease hypertension, type 2 diabetes and chronic lung diseases, are at higher risk of developing severe illness and complications from SARS-CoV-2 [5]. Nevertheless, there is a wide range in infection severity from no symptoms to severe pneumonia until death, depending on the personal immune system response, the viral load, and its age-related pathological conditions.
Geriatrics patients are frequently subject to falls, with long stays on the ground in supine position, often complicate b aspiration pneumonia due to the passage of saliva and gastro-esophageal content, reason why in an epidemic context, differential diagnosis with COVID-19 pneumonia is not always obvious [6]. We present a case of an aged patient hospitalized for fall affected from COVID-19 pneumonia, initially misinterpreted for an aspiration pneumonia.

CASE PRESENTATION

Female patient of 92 years, with chronic heart disease under anticoagulation therapy with vitamin K antagonists, is addressed in our short-stay unit for older adults for fall complicated by head trauma. Among the antecedents of the patient, there were an uncontrolled arterial hypertension, hypertensive cardiac failure and an atrial fibrillation with sinus node dysfunction that required pose of a pace-maker). The patient was known for the history of repeat falls in the past few months. She remained on the ground for a few tens of minutes. The cranial CT scan didn't report any particular anomaly, except for a chronic maxillary sinusitis. The clinical exam showed a frontal right subcutaneous hematoma resulting from the fall, an irregular cardiac rhytm, and the presence of crackles at the base of the right lung and two painful cervical bilateral adenopathies. She presented an isolated febrile peak at 38.8°C regressed spontaneously in the following days and repetitive peaks of arterial hypertension at 200/110 mmHg, resolutive after the introduction of a calcium channel blocker drug. At the blood analysis any type of anomaly was reported, including inflammatory markers. Antibiotic therapy with Amoxicillin and Clavulanic acid 1000/125 mg three times a day was introduced the day of the hospitalization for a diagnosis of aspiration pneumonia.
At day 2 of hospitalization under antibiotic therapy, the patient was apyretic, eupneic, with the presence of dry cough and with the persistence of crackles at the base of the right lung.

Fig. 1 Chest radiographie - Bilateral interstitial pneumonia.

The patient started to appear at that moment confused with temporospatial disorientation. A deglutition test showed absence of aspiration disorders and nor desaturation during alimentary test. At day 4 of hospitalization, after four days of antibiotic therapy, the patient had fever at 39.3 °C associated with dry cough with an SpO2 of 95%, requiring Oxygen. At the blood analysis of the same day it was evident a small increase of PCR at 15 mg/L (NR 0.3-5 g/L) and a lymphocytopenia at 0.52 g/L (NR 0-4 g/L) The chest radiographie at day four of hospitalization showed bilateral interstitial pneumonia (Fig. 1).
All these unusual findings (Tab. I) motivated the nasopharyngeal PCR test for the research of COVID-19 that resulted positive so that the patient was transferred to the infectious disease department.

DISCUSSION

It should be considered that especially in older people, the symptoms and signs of COVID19 infection are highly nonspecific and still under study but that some alarm bells in a pandemic period could help avoid delaying the diagnosis. It is typical for geriatricians to make a diagnosis of aspiration pneumonia after a fall. It is less frequent to imagine that behind a fall could be a COVID19 pneumonia. The challenge is twofold, because not only is it known that the clinical picture of COVID-19 is already multifaceted, it is even more so in older patients who have tiny specific pictures of the disease.

Table I. Clinico-biological data.

	Day 1	Day 2	Day 3	Day 4
Temperature	38.8 °C	36.6 °C	37.1 °C	39.3 °C
Lymphocytes (NR = 0-4 g/L)	2 g/L	/	/	0.52 g/L
PCR (NR = 0.3-5 g/L)	2.2 g/L	/	/	15 g/L
Dyspnea	⊖	⊖	⊖	+
Cough	⊖	⊖	+	+
Confusion	⊖	⊖	⊖	+
Antibiotherapy	+	+	+	+

Although falls are frequent in geriatric population, its possible precipitating factors such as infections should be taken into consideration. In our case, the pneumonia caused by SARS-CoV-2 virus has not to be excluded as the trigger event of the fall. At the same time, a differential diagnosis between an aspiration pneumonia and a COVID-19 pneumonia must be made, especially in this pandemic period.
It is known that the geriatric population often have an altered clinical presentation of diseases, in particular regarding infectious diseases.
This clinical case is compelling because highlights the atypical possible presentation, unusual signs and symptoms appearing in older people in face of COVID-19 infectious disease, which leads to a delayed diagnosis and could be easily misinterpreted for other infectious disease.Useful elements for differential diagnosis were the following:

1 at the blood analysis there were no signs of infection. No raise of inflammatory markers (CRP in particularly), despite the presence of pneumonia. White blood cell count was also inside normal range;
2 lymphopenia was the only feature that appears associated with a febrile peak at 39.2 °C and dried cough after four days of antibiotics treatment;
3 the patient started to be confused without any clinical explanation, that in a geriatrics population is suspicious for an infectious process;
4 the deglutition test showed absence of aspiration disorders.

CONCLUSIONS

In our patient, pneumonia was initially attributed to common aspiration due to a fall with head trauma.
We want to underline that the following clinical findings, anomalous for aspiration pneumonia, allowed the correct diagnosis of COVID-19: appearance of lymphopenia, normal range inflammatory markers, state of mental confusion, the persistence of fever and cough despite the antibiotics treatment.
In geriatrics situations are often complicated, the interplay of several acute and chronic pathologies make etiological investigation sometimes laborious. A rigorous analysis of clinical and paraclinical elements should be considered, concerning singular situations, to avoid falling into the trap of easy diagnosis [7].

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Conflict of interest

The Authors declare no conflict of interest.

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Author contributions

The Authors contribuited equally to the work.

Ethical consideration

Not applicable.

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