

## Case Report

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# Metastatic hip fracture in a patient with severe coronavirus disease 2019: Case report

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### Abstract

**Background:** During the 1st Alarm State in Spain due to the Coronavirus Disease 2019 pandemic the screening for cancer was suspended and in the following months the routine diagnosis suffered delays, which is supposed to hold up the final diagnosis and probably affect overall survival.

**Case report:** We present a clinical case in which the diagnosis of suspicion thanks to a complete physical examination during an intensive care unit hospitalization because a severe Coronavirus Disease 2019 allowed an early diagnosis and treatment of the oncological process.

**Clinical rehabilitation impact:** In order to adapt to the new era of SARS-CoV2 infection that have had an impact decreasing the number of cancer diagnoses, Physical Medicine and Rehabilitation Departments must include oncological diseases on the differential diagnosis, even more when symptoms does not improve or are not consistent.

**Keywords:** COVID19; Cancer; Rehabilitation; Hip fracture.

**Abbreviations:** COVID19: Coronavirus Disease 2019; ICU: Intensive Care Unit; ADL: Activities of Daily Living; O2Sat: Oxygen Saturation; PCR: Polymerase Chain Reaction; SAMS: Staphylococcus Aureus Methicillin Sensible; PM&R: Physical Medicine and Rehabilitation; FiO2: Fraction of Inspired Oxygen; RASS: Richmond Agitation Sedation Scale; MRC: Medical Research Council; CAT: Computerized Axial Tomography; PAAF: Fine needle Puncture Aspiration Assessment; PICS: Post-Intensive Care Unit Syndrome.

### Introduction

The fast and uncontrolled spread of the COVID19 pandemic all over the world meant strong emergency measures, such as only urgent medical services were guaranteed.

In comparison with previous years there has been a decrease in cancer diagnosis because of oncological diseases screening suspension, increased difficulties to access primary and hospital care and lengthening of the waiting time for diagnostic cancer tests. There has also been a reduction of the programmed surgeries and treatments and more limitations to guarantee the

family accompaniment during the process [1]. An important long-term cumulative impact on mortality due to breast cancer and the pandemic disruption has been described [2].

This case is an example of the fundamental need of multi-disciplinary special attention that must have those patients with severe COVID19 admitted to an ICU and with long hospital stays, highlighting the role of the physiatry through its examination and care.

### Case report

We present a 45 years old woman without a relevant per-

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sonal medical history except for low back pain radiated in the anterior right thigh of months of evolution diagnosed as a posterior osteophytic disc protrusion L5-S1. She was completely independent for ADL and with no register of superior neurological function alteration. She came to hospital emergencies because of dyspnea of 24 hours evolution associated with dysgeusia, without fever or cough. She referred to a close contact with a possible case of COVID19, which has been clinically diagnosed without confirmation by a specific test.

She showed signs of respiratory distress with a high breathing rate and O<sub>2</sub>Sat 92% using a reservoir bag. Cardiopulmonary auscultation had no obvious alteration. The chest x-ray revealed diffuse bilateral infiltrates compatible with bilateral pneumonia caused by SARS CoV-2 (Figure 1), confirmed by a posterior nasopharynx PCR test also performed at the emergency hospital care. The patient was admitted into the ICU requiring intubation and mechanical ventilation the next day of the hospital admission.



**Figure 1:** PA chest x-ray with diffuse bilateral infiltrates compatible with bilateral pneumonia caused by sars-cov2.

During her stay in the ICU the patient needed respiratory assistance with an endotracheal intubation. Unsuccessfully, 7 days after they tried to retire it but the patient needed to be reintubated. 17 days after the first tracheostomy with a T cannula was performed.

She remained with pseudo-analgesia and was hemodynamically stable without needing vasoactive drugs. Also presented a bacteraemia caused by SAMS and was superinfected by *Serratia marcescens* and *Pseudomonas aeruginosa*. Day 26 of ICU stay the consultation was made to the PM&R Department. By then, she had a good respiratory evolution maintaining 98-99% SatO<sub>2</sub> through the T cannula with a FiO<sub>2</sub> of 50% with 10 liters of oxygen.

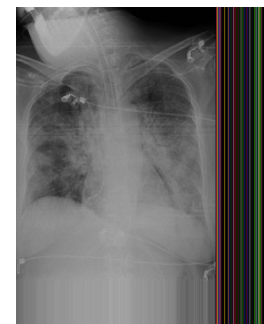
At the first physical examination the patient was conscious, directed her gaze, obeyed simple orders with RASS +1 and needed mechanical ventilation through a T cannula with a FiO<sub>2</sub> at 50% never below 94% SatO<sub>2</sub> during our examination but with abundant secretions and expectorating difficulties. The articular balance of both superior and inferior limbs was free with a global muscular balance of 2/5 on the MRC. Nonetheless, her restlessness with the mobilization of the right hip plus right lower limb shortening and external rotation made us decide to apply for an x-ray, in which could be appreciated a pertrochanteric fracture on the right femur with pathological appearance and lytic lesions suggesting metastasis (Figure 2). In conjunction with the intensive care physicians, the decision was to extend her study with a body CAT scan in which was appreciated

a solid, nodular, hyper-engaging and spiculate lesion at the right breast located retroareolar. The final diagnosis was confirmed thanks to PAAF as a Nottingham grade I infiltrating carcinoma of the right breast with right axillary and pectoral adenopathies, the biggest of them of 10,5 mms. It was also found generalized bone involvement with a mixed blasted and lytic pattern compatible with metastatic bone infiltration and multiple crushing of vertebral bodies, with significant loss of height (superior to 50%) at D6.

After the extension study was completed, five days after the first hip x-ray, surgery was performed on the fracture by a closed reduction and osteosynthesis with an intramedullary nail as well as filling with bone cement (Figure 3). During the procedure the patient needed one hematite concentrate transfusion but did not appear to have any complications.



**Figure 2:** PA right femur x-ray with a pathological pertrochanteric fracture.



**Figure 3:** PA right femur x-ray after surgery of a pertrochanteric fracture with osteosynthesis using an intramedullary nail as well as bone cement filling.

When the patient went back to ICU maintained a good clinical evolution and improved her respiratory function, being able to decannulate in 48 hours after surgery and only needing 2 liters of oxygen via nasal spectacles to reach 98-100% O<sub>2</sub>Sat. The patient was transferred to general internal medicine beds 5 days after surgery.

It was initiated physiotherapy treatment during the stay at the ICU and also pending the posterior hospitalization consisting of passive and active-assisted mobilization and gait reeducation plus respiratory kinesitherapy, with good progress.

After the hospital discharge it was initiated radiotherapy on D6 vertebra and right hip (20 Gy total dose) and over ovarian regions (12.5 Gy total dose). She was performing in her ADL with the help of a wheelchair getting a 65/100 on the Barthel scale and 35/100 on the Harris modified functional classification.

The follow up was performed at outpatient consulting offices of the PM&R Department, without dropping out the physiotherapy treatment. At 10 months follow up the patient showed a great improvement of her functional abilities with functional gait without technical assistance, 95/100 on the Barthel scale and 76/100 on the modified Harris functional classification.

## Discussion

It is known that the diagnostic delays on oncological diseases are estimated to trigger a worse overall survival. Maringe C et al [3] performed an estimation of the deaths attributable to delay due to COVID19 pandemic in diagnosis on the four principal tumours of the United Kingdom. The results were between 3.291 and 3.621 avoidable deaths and between 59.204 and 63.229 lost life years. In those studied tumour groups (breast, lung, colon and esophagus) the increase of death at 5 years on account of the diagnostic delay was 7,9%.

Zadnik et al [4] analysed the data of the Slovenian cancer register focusing on the number of referring to Oncological Services including first time visits, reviews and genetic counselling appointments between November 2019 and May 2020. They ascertained a decrease in the number of first-time visits (33%), reviews (46%) and genetic counselling appointments (85%) compared to April 2020 with a partial recovery in May of the same year.

This situation has also affected the surgical services which suspended the majority of the programmed surgeries. Nevertheless, some specific surgeries including health emergencies were preserved as it is indicated by Gupta et al [5] who describe three different palliative surgeries during the COVID-19 era.

Helm et al [6] studied the stress and quality of life in women who received care due to breast cancer. 15 women treated the week of 18 of March of 2020 were studied taking into account the impact of the rehabilitation services closure. The results showed an increase of the distress sensation and fatigue perceived by those patients measured by an 11-point scale named the Distress Thermometer, less physical activities and worse quality of life measured by a self-reported questionnaire named the Functional Assessment of Cancer-Therapy (General). Rehabilitation services have also been severely affected because of the lockdown and COVID19 pandemic. During the first months the consultations were decreased, more significantly the ones face-to-face, and the physiotherapy rooms were forced to close which meant an even more long waiting list having special negative repercussions on the functional prognostic in those patients with more disabling illnesses [7]. Timely multidisciplinary rehabilitation may improve prognosis and quality of life, but the issue is precisely about how much time passes until the first contact with rehabilitation medicine and the beginning of a personalized treatment plan, most likely including the need of physiotherapy. This situation reflects the need of assuring the maintenance of the rehabilitation services in order to achieve the maximum functional potential, both physical and cognitive, and to reduce disability [7,8].

Furthermore, rehabilitation medicine defiance is to be able to meet the increased demand resulting from the pandemic. In addition to treating the immobility syndrome and PICS soften both associated with severe COVID19 survivors, rehabilitation care is compounded by the difficulty of lack of knowledge about specific complications of the disease and the best ways to address them.

A single-arm observational study has been performed by Puchner B et al [9] aiming to explore the effects of early post-acute rehabilitation in those patients focusing on respiratory function, mobilization and psychological management. A total of 23 patients were guided during their stay at the rehabilitation centre by a multidisciplinary team that included: physiotherapists, psychologists, psychiatrists, internists, pulmonologists, cardiologists and neurologists. Post-acute rehabilitation was initiated immediately after hospital discharge. After three to four weeks undergoing the multidisciplinary rehabilitation plan the performance status of all patients had improved. The most relevant and statistically significant improvements were perceived in walking distance measured by the six-minute walking test, basic activities of daily living measured with the Barthel scale and an increase in respiratory muscle strength measured by the maximal inspiratory pressure; however there was still a deteriorated lung function and a reduced diffusion capacity for carbon monoxide.

Some authors have compared this period of the COVID19 pandemic with other big historical events such as the two World Wars or polio epidemic in which the rehabilitation services, which have to give response to a great variety of procedures, suffered: resource implementation, knowledge actualization and organizational changes in order to improve efficiency and effectiveness [10].

## Conclusions

Patients with severe COVID-19 can require long ICU stays under sedation which can cause a severe pathology underdiagnosis situation, meaning that the differential diagnosis over non common symptoms has to include tumoral pathology so as not to go unnoticed. Early diagnosis and rehabilitation treatment can allow to achieve a better survival prognosis and a better functional result in those patients.

## Declarations

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