thema nodosum, hepatitis, pulmonary nodules or musculoskeletal involvement.[1–3] We reported the case of a patient in whom the only clinical sign of Bh infection was sacroiliitis. Few published studies in the literature report the frequency of musculoskeletal manifestations (MSMs). One of them analysed 913 subjects diagnosed with CSD between 1991 and 2002. 10.5% presented an MSM: 5.8% had myalgia and 5.5% had arthralgia/arthritis.[2] The most commonly affected joints were the knees (23%), wrists (20%), ankles (18%) and elbows (11%); no cases of sacroiliitis were reported.[3] Among patients with joint disease, 42% presented severe compromise of weigh-bearing joints that limited walking, similar to that reported in our case.[2,3]

Regarding risk factors, it has been reported that being over 20 years of age and being female are significantly associated with developing MSM.[2,3] Our patient presented both risk factors.

In atypical cases of CSD, the non-specificity of the signs and symptoms requires a high level of suspicion. Our case is a clear example, in which the bartonellosis study was proposed due to the patient's persistent fever. At present, the most widely used diagnostic method is serology, in which an anti-Bh IgG titre of >1:256 is highly suggestive of a current or recent infection.[4]

Lastly, we would like to mention that there are no pathognomonic radiological signs of osteoarticular compromise by Bh. In the literature, they are generally described as osteolytic lesions, similar to our case.[5]

References

1. Anderson BE, Neuman MA. *Bartonella spp.* as emerging human pathogens. Clin Microbiol Rev. 1997;10:203–19.
2. Maman E, Bickels J, Ephros M, Paran D, Comaneshter D, Metzkor-Cotter E, et al. Musculoskeletal manifestations of cat scratch disease. Clin Infect Disease. 2007;45:1535–40, http://dx.doi.org/10.1086/523587.
3. Giladi M, Maman E, Paran D, Bickels J, Comaneshter D, Avidor B, et al. Cat-scratch disease-associated arthropathy. Arthritis Rheum. 2005;52:3611–7, http://dx.doi.org/10.1002/art.21411.
4. Cunha BA, Lortholary O, Cunha CB. Fever of unknown origin: a clinical approach. Am J Med. 2015;128:1138.e1–15, http://dx.doi.org/10.1016/j.amjmed.2015.06.001.
5. Hopkins KL, Simoneaux SF, Patrick LE, Wyly JB, Dalton MJ, Snitzer JA. Imaging manifestations of cat-scratch disease. AJR Am J Roentgenol. 1996;166:435–8, http://dx.doi.org/10.2214/ajr.166.2.8553962.

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Monitoring of the rehabilitation therapy of COVID-19 effort dyspnea☆

Monitorización del tratamiento rehabilitador de la disnea de esfuerzo por COVID-19

Coronavirus disease (COVID-19), caused by infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), ranges from no symptoms to severe respiratory failure.[1] However, the disease does not end with the acute stage. A previous study reported that 56% of patients continued to present symptoms such as palpitations, chest pain, dyspnoea at rest and dyspnoea on exertion with exercise, even after negative reverse transcription polymerase chain reaction (RT-PCR) test results and hospital discharge.[2]

We report the case of a 26-year-old patient, a member of our hospital's healthcare staff, with no personal history of note, who sought hospital care as she had started to experience dyspnoea on exertion (when engaging in moderate-intensity sport). A previous serology study to screen for asymptomatic carriers at the same hospital (chemiluminescence and enzyme-linked immunosorbent assay) had detected IgG^+ IgM– serology for SARS-CoV-2. The patient remained asymptomatic up to that time.

Physical examination revealed no findings of note, and lung auscultation was normal. At that time, the patient refused a computed tomography (CT) scan of the chest. Instead, a lung ultrasound was performed with a portable ultrasound device (Butterfly iQ — Butterfly Network, Guilford, CT, United States). The examination regimen followed included 12 areas of the thorax, 6 in each hemithorax (anterior, lateral and posterior, subdivided into superior and inferior).[3] This revealed a thickened, irregular pleural line with prominent B lines in the left posterosuperior lobe — the only pathological finding on examination.

The patient was referred to the pulmonary rehabilitation clinic. Her oxygen saturation (SO_2) was 97% and her heart rate (HR) was 64 bpm. In the initial assessment, a six-minute walk test was performed, in which she walked a total of 720 m with a final O_2 sat. of 95% and a maximum HR of 166 bpm. In the stress test, eight minutes of exertion and a maximum load of 100 watts yielded an O_2 sat. of 94% and a maximum HR of 160 bpm. The patient's score on the Borg scale was 15, meaning that her perceived exertion intensity was hard.

For this reason, an at-home pulmonary rehabilitation programme was designed. This programme included the following exercises:

- Slow, deep breaths sustained over time (with shoulders lifted)
- Diaphragmatic breathing, pursed-lip expiration (noting improvement in desaturation)
- Diaphragmatic training: placing a weight of 1–3 kg on the abdomen in a supine position and stretching the rib cage[4]

Two sessions of 10 min a day were done for six weeks, instead of one session a day;[5] thus the training was customised to our patient's age and greater functional capacity.

At the end of the programme, the lung ultrasound was repeated and showed resolution of the previously reported abnormalities. An improvement was also observed in the six-minute walk test and stress test, with the previously observed desaturations disappearing.

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The usefulness of imaging tests for the diagnosis of the disease is indisputable. A prior study found that residual lesions were common on chest CT scans after SARS-CoV-2 pneumonia, and could persist up to 4 weeks after the onset of symptoms.[2] Therefore, it is advisable to do follow-up of lung lesions until they resolve. However, performing this follow-up using chest CT scans carries a number of disadvantages, such as limited access due to high numbers of patients and radiation exposure on the part of the patients. On the other hand, pulmonary ultrasound is proving a suitable imaging tool for diagnosis and follow-up in this type of patient. It is harmless; it is done quickly following simple, easy-to-use protocols; and its findings correlate well with chest CT scan findings.[3]

Residual pulmonary fibrotic changes can lead to a restriction of physical activity due to the shortness of breath caused by decreased lung function, resulting in a lower quality of life.[2]

In the short term, pulmonary rehabilitation is aimed at relieving dyspnoea and anxiety; in the long term, it is aimed at recovering the patient's maximum functionality, improving their quality of life and facilitating their integration into society.[6] It is important that respiratory physiotherapy exercises are indicated on an individual basis. Therefore, it will be necessary to perform a prior comprehensive evaluation by means of a six-minute walk test and a stress test.[3]

A previous study[7] found that the majority of asymptomatic COVID-19 patients did not develop symptoms during a brief three-week follow-up period. As far as we know, this is the first case that has suggested the possibility that asymptomatic patients may also develop late symptoms in the natural course of the disease. It is expected that, as the prevalence of the disease increases, visits will also increase for persistent symptoms after recovery from the infection.[8] Some of these symptoms may not be easily attributed to COVID-19, such as dyspnoea on exertion, and may show a suitable response to home-based pulmonary rehabilitation, if detected.

Serological diagnosis may be important in confirming SARS-CoV-2 infection, especially in cases in which RT-PCR testing is not available and cases in which the onset of symptoms was more than two weeks earlier.[9] Still, the risk of false positive results, especially if interpreted in isolation, should not be overlooked.[9,10]

For epidemiological surveillance and disease detection campaigns, a combination of RT-PCR, serology and lung ultrasound could more accurately diagnose current and past COVID-19 infection.[10] In this health emergency, it is important to use a suitable strategy for diagnosis to identify asymptomatic carriers who could be responsible for the spread of the disease, especially in places where the prevalence of the disease is high, such as hospitals.[11]

References

1. Yang R, Gui X, Xiong Y. Comparison of Clinical Characteristics of Patients with Asymptomatic vs Symptomatic Coronavirus Disease 2019 in Wuhan, China. JAMA Netw Open. 2020;3(5):e2010182, http://dx.doi.org/10.1001/jamanetworkopen.2020.10182.
2. Zheng Z, Yao Z, Wu K, Zheng J. Patient Follow-up after Discharge after COVID-19 Pneumonia: Considerations for Infectious Control. Journal of Medical Virology. 2020:0–2, http://dx.doi.org/10.1002/jmv.25994.
3. Tung-Chen Y, Marti de Gracia M, Diez Tascon A, Agudo-Fernandez S, Alonso-Gonzalez R, Rodriguez Fuertes P, et al. Correlation between chest computed tomography and lung ultrasonography in patients with Coronavirus disease 2019 (COVID-19). Ultrasound Med Biol. 2020, http://dx.doi.org/10.1016/j.ultrasmedbio.2020.07.003.
4. Sheehy LM. Considerations for Postacute Rehabilitation for Survivors of COVID-19. JMIR Public Health Surveill. 2020;6(2).
5. Liu K, Zhang W, Yang Y, Zhang J, Li Y, Chen Y. Respiratory rehabilitation in elderly patients with COVID-19: A randomized controlled study. Complement Ther Clin Pract. 2020;39.
6. Yang LL, Yang T. Pulmonary Rehabilitation for Patients with Coronavirus Disease 2019 (COVID-19) [published online ahead of print, 2020 May 14]. Chronic Dis Transl Med. 2020;6(2):79–86, http://dx.doi.org/10.1016/j.cdtm.2020.05.002.
7. Sakurai A, Sasaki T, Kato S, et al. Natural History of Asymptomatic SARS-CoV-2 Infection [published online ahead of print, 2020 Jun 12]. N Engl J Med. 2020:NEJMc2013020, http://dx.doi.org/10.1056/NEJMc2013020.
8. Carfì A, Bernabei R, Landi F. Gemelli Against COVID-19 Post-Acute Care Study Group. Persistent Symptoms in Patients After Acute COVID-19 [published online ahead of print, 2020 Jul 9]. JAMA. 2020:e2012603, http://dx.doi.org/10.1001/jama.2020.12603.
9. Deeks JJ, Dinnes J, Takwoingi Y, et al. Antibody tests for identification of current and past infection with SARS-CoV-2. Cochrane Database Syst Rev. 2020;6:CD013652. Published 2020 Jun 25. doi:10.1002/14651858.CD013652.
10. Watson J, Whiting PF, Brush JE. Interpreting a covid-19 test result. BMJ. 2020;369:m1808. Published 2020 May 12. doi:10.1136/bmj.m1808.
11. Characteristics of Health Care Personnel with COVID-19 — United States, February 12–April 9, 2020. MMWR Morb Mortal Wkly Rep. 2020;69:477–81, http://dx.doi.org/10.15585/mmwr.mm6915e6.

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Surgical site infection by *Mycobacterium senegalense* in a pediatric patient☆

Infección de herida quirúrgica por Mycobacterium senegalense *en paciente pediátrico*

Nontuberculous mycobacteria (NTM) can cause skin and soft-tissue infection. Although uncommon, cases of surgical wound infection have been reported. Their diagnosis is important for proper treatment.

We report the case of a 4-year-old girl who underwent surgery for a congenital melanocytic nevus 6 cm in diameter on her right thigh. Five days after surgery, she presented swelling of the surgical site. This was treated with amoxicillin/clavulanic acid. Nevertheless, the lesion increased in size, and wound dehiscence occurred. She underwent surgery again after 20 days and debridement was performed.

Exudate samples were seeded on standard non-selective media, blood agar and chocolate agar, as well as on specific media for mycobacteria: Löwenstein-Jensen and Bactec MGIT 960 liquid medium (BD Diagnostics, United States). At 72 h, tiny, translucent colonies grew. These colonies were identified using MALDI-TOF mass spectrometry (Bruker Daltonics GmbH, Leipzig, Germany). The strain was identified as *Mycobacterium senagalense* with a score of 2.1. Given the high genetic similarity between *M. senegalense* and *Mycobacterium conceptionense*, which was recently reported,[1,2] the species were distinguished by biochemical and growth characteristics.[3] Specifically, *M. senegalense* was positive for inositol and negative for mannitol, and it grew at 42 °C,

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