tion in mild disease; issues of availability and resource rationing; the patient's haemodynamic instability for transfer; and the risk of transmission of the infection, among other disadvantages, may eclipse the technique's potential benefits.

There is currently no evidence on the usefulness of thoracic ultrasound when monitoring the disease. The aim of this case series is to report the sequential thoracic ultrasound findings in 3 patients with mild COVID-19, from onset of symptoms up to complete resolution on ultrasound.

We report the cases of a 35-year-old man (patient 1), a 35-year-old woman (patient 2) and a 45-year-old woman (patient 3) who visited the emergency department with a dry cough, asthenia and low-grade fever. Physical examination was normal, and all 3 had positive reverse transcriptase–polymerase chain reaction (RT–PCR) tests of nasopharyngeal exudate.

A thoracic ultrasound that schematically examined the anterior, lateral and posterior areas bilaterally using a pocket-sized device (Butterfly IQ) showed an A-line pattern (patient 1, Fig. 1), isolated B-line (patient 2, Fig. 2), irregular pleura and subpleural consolidation (patient 3, Fig. 3), all on the posterior bases. All 3 patients were discharged from hospital with symptomatic treatment and hydroxychloroquine (2 patients) and had daily follow-up ultrasounds (Figs. 1–3). In the days that followed, progression towards larger numbers of isolated, confluent B-lines; pleural effusion; and subpleural consolidations (at the most symptomatic time) were seen. While signs and symptoms were resolving, the thoracic ultrasound showed the progressive replacement of consolidations with isolated B-lines, and finally the reappearance of normal A-lines (asymptomatic), though this happened on different days in each patient. Resolution of symptoms occurred between day 14 and day 21, though with patients 1 and 2, signs and symptoms of dyspnoea and asthenia on exertion persisted until practically day 35.

There is growing evidence for the use of imaging techniques in the management of COVID-19. A previous study of 1,049 patients who had RT–PCR and CT scans found CT to be more sensitive to abnormalities (59 versus 88%, respectively).[4] This would suggest that CT should be considered as a detection tool, particularly in epidemic areas. Another study in 21 patients with pneumonia caused by uncomplicated COVID-19[5] found that performing CT scans every 4 days enabled physicians to determine that radiological findings peaked on approximately day 10, and resolution was very gradual, persisting beyond day 26, when a follow-up CT scan was performed.

Subpleural consolidations, pleural irregularity and B-lines in the context of this pandemic may suggest lung infection caused by COVID-19. As exemplified in the 3 cases reported, it is possible to correlate thoracic ultrasound findings to symptoms and their resolution, which in 2 of the cases this did not happen until the fifth week, when A-lines (normal aeration pattern) were seen to reappear. This accounts for some of the residual symptoms that many patients report after discharge and avoids other, more invasive complementary tests.

To date, thoracic ultrasound and CT have been used for the diagnosis and follow-up of patients with COVID-19, particularly in patients with residual symptoms; however, these resources may not be available everywhere or their use may be contraindicated. Hence, alternative methods must be considered.

Thoracic ultrasound is harmless and may be completed quickly by following simple, easily applied protocols. Currently there is a wide range of available portable, pocket-sized ultrasound devices which allow studies to be performed on asymptomatic and unstable patients, either in their homes or in a hospital setting. Although there is ongoing debate about how it should be applied, there is a general consensus on its usefulness.[6]

The main limitation of thoracic ultrasound is its low specificity, meaning its findings can be similar to findings in different diseases. However, in the current pandemic, detection of these findings may be highly suggestive of COVID-19 infection.

In conclusion, it is worthwhile to consider using thoracic ultrasound in follow-up until complete resolution of symptoms.

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Bacteremia caused by *Propionibacterium* (*Propionimicrobium*) *lymphophilum*

Bacteriemia producida por Propionibacterium (Propionimicrobium) lymphophilum

Propionibacterium (Propionimicrobium) lymphophilum has undergone several name changes,[1,2] and the description of this microorganism has recently been amended.[3] This pathogen forms part of human skin and urinary tract microbiota and has been associated with a very small number of infections in humans.[4,5]

We recently published the first case of bacteremia caused by this bacterium who was isolated in pure culture from an elderly patient,[6] and we now report another case obtained from a blood culture that was initially misidentified by MALDI-TOF MS.

An 83-year-old man was admitted to the Trauma-Emergency Department of our hospital with head trauma. Two foci of subarachnoid hemorrhage were observed on cranial CT scan, and severe abdominal pain was reported by the patient, who was transferred to the General Emergency Department. The abdominal CT scan revealed distal ileus perforation with fecaloid peritonitis, and the clinical records showed a history of diabetes mellitus and Parkinson disease. The patient underwent abdominal surgery with resection

and anastomosis of the involved small intestine. At admission, blood analysis results were normal but the patient had a fever (38 °C). Blood cultures were taken on the same day and at the same hour from each arm and delivered to the hospital microbiology laboratory. At this time, empirical therapy was initiated with meropenem (1 g/8 h) and linezolid (600 mg/12 h). The samples were inoculated onto the BACTEC FX 40 (Becton Dickinson, Franklin Lakes, NY) monitorization system for culture. On day 2 of incubation, both anaerobic bottles were found to be positive. The samples were subcultured in aerobic or anaerobic blood agar (BD Columbia Agar with 5% Sheep Blood, Becton Dickinson, Franklin Lakes, NY). All media were incubated at 37 °C, and AnaeroGen Compact (Oxoid Ltd., Wide Road, Basingstoke, UK) was used as anaerobic system. Gram staining of the blood cultures exhibited abundant Gram-positive coccobacilli; on the second day of incubation, abundant colonies of these microorganisms were observed in pure culture only in anaerobic blood agar medium. Application of MALDI-TOF MS version 9 (8468 msp) (Bruker Biotyper, Billerica, MA) identified the strain as *Peptoniphilus indolicus* (score 1.86). Given the relatively low score, the strain was sent to the Center of Genomic and Oncologic Research (GENYO, Granada, Spain) for 16S rRNA gene sequence analysis using a previously reported method.[7] A fragment of 1482 bp was obtained, yielding 99.3% similarity with the *P. lymphophilum* type strain JCM 5829 Gene Bank sequence (AB729070). The 16S sequence was also submitted to the GenBank (accession number: MT126739).

The E-test was employed for antimicrobial susceptibility evaluation, applying the 2020 EUCAST criteria[8] with the exception of moxifloxacin, for which the 2020 CLSI criteria[9] was used. MIC values were penicillin (0.032 mg/L), amoxicillin-clavulanate (<0.016 mg/L), piperacillin-tazobactam (<0.016 mg/L), clindamycin (>256 mg/L), meropenem (0.006 mg/L), imipenem (0.016 mg/L), moxifloxacin (0.38 mg/L), and metronidazole (>256 mg/L).

Linezolid was withdrawn, and meropenem was changed to piperacillin-tazobactam (1 g/12 h) for 7 days. The patient became afebrile at 2 days after starting the antimicrobial treatment, and he was discharged one month later.

P. lymphophilum is among the most infrequent anaerobic bacteria associated with human infection, and, to our knowledge, only four cases have been reported in the medical literature to date.[4–6] Here, we report a second case of bacteremia due to *P. lymphophilum* isolated in pure culture. A key issue in relation to this microorganism is whether its isolation corresponds to a true pathogen, which is supported in the present case by its isolation in pure culture in both sets of blood cultures, which were taken using aseptic procedures. In this case, it can be considered a secondary bacteremia from an abdominal source.

MALDI-TOF MS is used for fast routine analyses in clinical laboratories and may be highly useful for the identification of anaerobic microorganisms and for the detection of new species responsible for infection. However, results should be interpreted with caution, and this technique produced the initial misidentification of *P. indolicus* in the present case. Species identification is highly probable when the score is $\geq$2.0[10] but must be confirmed when the score is below this cutoff by employing other diagnostic techniques, such as 16SrRNA gene sequencing. Moreover, a new MALDI software update is recommended in order to improve the scoring.

In conclusion, this is the second report of *P. lymphophilum* as cause of bacteremia isolated in pure culture and indicates that this pathogen can be responsible for severe infections. This case highlights the need to confirm results when low MALDI-TOF scores are obtained.

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Conflict of interest

Authors declare no conflict of interest.

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