Derrame pleural debido a *Parvimonas micra*. Descripción de un caso y revisión de la literatura de 30 casos

RESUMEN
Se describen las características clínicas y microbiológicas de las infecciones causadas por *Parvimonas micra*, incluyendo 30 casos revisados de la literatura y un nuevo caso tratado en nuestro centro. De los 31 pacientes, 18 eran hombres; la media de edad al diagnóstico fue de 65,1 ± 13,0 años. En 14 pacientes, la localización de la infección fue la columna vertebral, mientras que las articulaciones y las válvulas cardíacas lo fueron en 5 cada una; en todos los pacientes con localización articular hubo dolor, y en caso todos los pacientes con afectación vertebral. El diagnóstico se obtuvo mediante aspiración de líquido o drenaje en 13 casos y mediante hemocultivos en 11. En 8 casos, técnicas moleculares fueron aplicadas. Los antimi crobianos más frecuentemente utilizados fueron clindamicina, penicilina, amoxicilina y ceftriaxona. El pronóstico fue favorable con el tratamiento médico en 28 pacientes. Las infecciones por *P. micra* son raras y requieren un alto índice de sospecha.


INTRODUCTION
*Parvimonas micra* is a fastidious anaerobic Gram-positive coccus which was originally classified as *Peptostreptococcus mic rkos*, being transferred to the *Micromonas* genus in 1999 and known as *Micromonas micr oks*. Later, Tindall and Euzéby in 2006 replaced *Micromonas* by *Parvimonas*, with only one species. *P. micr a* is a member of gastrointestinal and oral cavity microbiota, and is mainly recognised as an oral pathogen being usually isolated from polymicrobial infections such as periodontitis. However, it has also been implicated in pol-
Pleural effusion due to *Parvimonas micra*. A case report and a literature review of 30 cases

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...imicrobial infections such as skin infections and abscesses. As isolated infections, few cases have been reported until this moment in the medical literature.

We were recently confronted with a rare case of pleural infection caused by *P. micra* in a patient without risk factors for *Parvimonas* infection such as periodontitis, dental abscess, dental work or systemic diseases. A review of case reports with infections caused by this microorganism was performed, recording epidemiological data as well as diagnostic and therapeutic approaches for this pathogen.

**METHODS**

We describe a case of a patient admitted at the University Hospital Virgen de las Nieves (Granada, Spain) with a pleural effusion due to *P. micra*.

Using the key words "*Parvimonas micra* infections", "*M. micros* infections" and "Peptostreptococcus micros infections" we searched MEDLINE (National Library of Medicine, Bethesda, MD), Web of Science, CINAHL, and Cochrane systematic review databases for case reports. We also checked the references cited in the papers for additional case reports published before 1966.

We traced 30 cases caused by *P. micra* and described in sufficient detail. These cases, along with our patient, are the basis of the present report. Data on age and sex, infection site, risk factors, time until diagnosis, clinical manifestations, laboratory findings, microbiologic diagnostic method, treatment, outcome and follow-up were recorded.

**CASE REPORT**

A 75-year-old woman underwent an aortic and mitral valve replacement due to a degenerative valvulopathy in September 2016. She had a diabetes mellitus and hypercholesterolemia for over 30 years, but no dental alterations (including dental prosthesis) nor periodontitis were observed. On the first postoperative day at the intensive care unit (ICU), a small pleural effusion was seen by performing a pulmonary ultrasound, which was treated with pleural drainage. This fluid was considered to be as a consequence of a congestive heart failure after surgery. At this time the patient was no febrile but a pulmonary X-ray showed a basal right infiltrate, and in the blood cell count a leukocytosis was observed (19,000 cells/mm³).

On the third day of incubation the growth of Gram positive rods was observed and a mass of colonies developed. The white and smooth colonies were observed and a mass of colonies developed. The C-reactive protein (CRP) level was 480 mg/dl.

On postoperative day 11, a pulmonary CT-scan was performed showing a loculated right pleural effusion that was drained and sent to the microbiology laboratory for culture. After centrifugation, the sample was inoculated in aerobic and anaerobic blood agar (BD Columbia Agar 5% Sheepblood, Becton Dickinson), chocolate agar (BD Choco Agar, Becton Dickinson) and thioglycolate broth (BD™ fluid Thioglycolate Medium, Becton Dickinson), all incubated at 37°C. Gram staining of the pleural fluid exhibited no microorganisms, but on the third day of incubation the growth of Gram positive cocci in small chains was reported only in the anaerobic blood agar. White and smooth colonies were observed and a mass spectrometry method (Bruker Biotype, Billerica, MA, USA) was employed to identify the strain as *P. micra* (score 2.35). The MIC of the bacteria to different antibiotics was carried out by the E-test method, being susceptible to all antimicrobials tested, including penicillin (0.16 mg/L), amoxicillin/clavulanic acid (0.16 mg/L), piperacillin/tazobactam (0.16 mg/L), clindamycin (0.25 mg/L), metronidazole (0.38 mg/L), and imipenem (0.08 mg/L).

No blood cultures were taken at this stage. Treatment with piperacillin/tazobactam and daptomycin was administered for 10 days, and the patient was then discharged from the ICU. At 2 months of follow-up, the patient remained clinically stable, and laboratory findings were normal.

**RESULTS**

A review of the medical literature identified 30 cases of *P. micra* infections with sufficient details for comparison, so this manuscript therefore comprised 31 patients, including the present case.

**General characteristics.** Table 1 summarizes the main findings for the 31 patients. There were 18 (58%) men. The mean age of patients was 65.1 ± 13.0 years (range, 30-86 years). Regarding infection sites, 14 (45.1%) cases were located in the vertebral spine, 5 (16.1%) each in heart valves and lung, 3 (9.6%) in pleura, 2 (6.5%) in head and neck, and 3 (9.6%) in brain. Two patients had cardiac valve replacement due to degenerative valvulopathy in September 2016. She had a diabetes mellitus and hypercholesterolemia for over 30 years, but no dental alterations (including dental prosthesis) nor periodontitis were observed. On the first postoperative day at the intensive care unit (ICU), a small pleural effusion was seen by performing a pulmonary ultrasound, which was treated with pleural drainage. This fluid was considered to be as a consequence of a congestive heart failure after surgery. At this time the patient was no febrile but a pulmonary X-ray showed a basal right infiltrate, and in the blood cell count a leukocytosis was observed (19,000 cells/mm³).

On the end of this day, the mechanical ventilation was withdrawn. On the postoperative day 8, fever of 38°C and an increase of the white cell count (23,000 cells/mm³) was seen, and empirical treatment with piperacillin/tazobactam (4 g/iv/8 h) and daptomycin (400 mg/iv/24 h) was started. Also, the C-reactive protein (CRP) level was 480 mg/dL.

On postoperative day 11, a pulmonary CT-scan was performed showing a loculated right pleural effusion that was drained and sent to the microbiology laboratory for culture. After centrifugation, the sample was inoculated in aerobic and anaerobic blood agar (BD Columbia Agar 5% Sheepblood, Becton Dickinson), chocolate agar (BD Choco Agar, Becton Dickinson) and thioglycolate broth (BD™ fluid Thioglycolate Medium, Becton Dickinson), all incubated at 37°C. Gram staining of the pleural fluid exhibited no microorganisms, but on the third day of incubation the growth of Gram positive cocci in small chains was reported only in the anaerobic blood agar. White and smooth colonies were observed and a mass spectrometry method (Bruker Biotype, Billerica, MA, USA) was employed to identify the strain as *P. micra* (score 2.35). The MIC of the bacteria to different antibiotics was carried out by the E-test method, being susceptible to all antimicrobials tested, including penicillin (0.16 mg/L), amoxicillin/clavulanic acid (0.16 mg/L), piperacillin/tazobactam (0.16 mg/L), clindamycin (0.25 mg/L), metronidazole (0.38 mg/L), and imipenem (0.08 mg/L).

No blood cultures were taken at this stage. Treatment with piperacillin/tazobactam and daptomycin was administered for 10 days, and the patient was then discharged from the ICU. At 2 months of follow-up, the patient remained clinically stable, and laboratory findings were normal.

**Microbiology and laboratory findings.** At the diagnosis...
of infection, data on the C-reactive protein (CRP) level was not reported in 14 (45.1%) patients. CRP was reported in 17 (54.8%) patients. The mean CRP level was 156.8 mg/L (range 8-480).

The majority of cases of this infection has been published from 2008 (n=21) with the denomination of *P. micra*. However, 4 cases published in 2000, 2004, 2008, and 2013 were named as *P. micros*, when this microorganism was already replaced in the *Parvimonas* genus. Before 1999, the 5 cases published were named as *P. micros*, and one case in 2005 as *M. micros*.

*P. micra* infections were diagnosed by drainage or aspiration of infected fluid in 12 (38.7%) cases, blood cultures in 9 (29%) cases, and tissue culture sample in 6 (19.3%). The remaining samples were diagnosed by a combination of different methods. Molecular techniques such as polymerase chain reaction and gene sequencing were used in 7 (22.5%) patients in which other techniques were also positives, but a patient was diagnosed by gene sequencing on aortic valve tissue. Blood cultures were taken in 19 (61.2%) patients and were positive for *P. micra* in 11 of them (57.8%).

Susceptibility tests for *P. micra* were performed in 18 (58%) isolates. From them, resistance to metronidazole were reported in 2 strains and to penicillin, amoxicillin/clavulanic acid, meropenem, moxifloxacin and cefoxitin in one strain.

**Antimicrobial treatment.** All patients underwent antibiotic treatment, with a single drug in 5 (16.1%) cases, with two drugs in 11 (35.4%) cases, and more than two in 15 (48.3%). Overall, clindamycin was used in 8 (25.8%) patients, and amoxicillin and ceftriaxone in 7 (22.5%) each one; treatment with penicillin was applied in 5 (16.1%) patients. As it can be seen in table 1, a great heterogeneity regarding treatment regimens could be observed.

**Outcome and follow-up.** A favourable outcome was recorded in 29 (93.5%) patients after antimicrobial treatment, although in 2 patients the outcome was not reported. The follow-up was reported in 17 (54.8%) patients, with a mean time of 8.1 months (range 1-55 months).

**DISCUSSION**

The presence of *P. micra* in human samples are mainly framed within a context of polymicrobial infections, especially in the oral cavity. These anaerobes have been particularly implicated in oral pathology, associated with periodontal infections. Moreover, several studies have demonstrated the presence of *P. micra* into abscesses from numerous localizations, such as both soft-tissue and ano-rectal infections and pleural empyemas, along with microaerophilic streptococci, *Bacteroides* and *Fusobacterium* species.

However, the prevalence of infection by *P. micra* as the sole pathogen is low. We were able to trace 30 case reports of *P. micra* infection published in sufficient detail. In our knowledge, the first documented case of *P. micra* (formerly *P. micros*) infection was reported in 1986 by Papasian et al., although the majority of cases have been published from 2008 (n=21). In the reviewed literature, spine seems to be the preferred location of the infection, followed by joints, heart valves and pleura. Until this moment, it is not known why the vertebral area is the main target for these infections.

As *P. micra* is part of the oral cavity microbiota, main risk factors for infection may include dental procedures such as periodontitis, tooth extraction, apical abscesses or dental carries. Sixteen patients (72.7%) showed any of these factors, and 6 patients showed systemic diseases than may influence in the development of infections for anaerobes. Conversely none of them was reported in 9 (29%) patients, indicating the influence of other factors in triggering the infection.

In oral infections, pathogenicity of *P. micra* has been attributed to their adhesion to gingival epithelial cells, cell morphotype and/or the proteolytic activity, as well as other factors such as the response of human macrophages. However, in isolated infections these factors are not clear. The majority of patients here reviewed had suffered dental procedures sometime before the infection, but risk factors were not reported in 9 patients while the remaining 6 patients had systemic diseases. Our patient, in addition to diabetes mellitus, was also subjected to mechanical ventilation during 48 h., suggesting that the endotracheal tube may serve as vehicle of transmission of oral pathogens such as *P. micra*.

According to our analysis, the symptoms are no specific and depend on localization of infection. Osteoarticular infections have been the most frequent focal expression of these infections, so the associated pain has been the main symptom in this case series. Pain is present in all patients with articular involvement, and in almost all patients with vertebral disease. Moreover, fever was documented in 45% of patients, and constitutional syndrome in almost all patients with heart involvement. However, the onset of symptoms can be insidious and development of the disease can be slow. Based on data from 22 patients, the mean time between onset of symptoms and *P. micra* infections diagnosis was 48 days; therefore, this disease should be suspected in cases with chronic symptoms.

The diagnosis of *P. micra* infection is mainly based on culture of an adequate sample obtained from the site of infection. Culture of drainage or aspiration fluid, tissue samples or blood cultures are adequate for the diagnosis of *P. micra*. In the cases here included, the majority of patients were diagnosed by culture of drainage fluid or by tissue culture obtained from the site of infection. On the other hand, blood cultures were taken in 19 (61.2%) patients, being positives in 11 (57.8%) of them. Blood cultures were positive in all patients with valvular infection; however, in one of them the diagnosis of species was not obtained, being finally performed by molecular techniques from the aortic valve tissue. Moreover, 5 patients with vertebral involvement had positive blood cultures being the method of diagnosis. In general, the results of the microbiol-
Table 1: Main findings in 31 patients with infection caused by *Parvimonas micra*.

<table>
<thead>
<tr>
<th>Patient (year of publication)</th>
<th>Author</th>
<th>Age (years)/ sex</th>
<th>Localization of infection</th>
<th>Risk factors and/or underlying diseases</th>
<th>Time until diagnosis (days)</th>
<th>Clinical manifestations</th>
<th>Laboratory findings</th>
<th>Microbiologic diagnosis</th>
<th>Treatment</th>
<th>Outcome/ follow-up (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 (1995) Papasian CJ</td>
<td>9/F</td>
<td>70/M</td>
<td>Vertebral</td>
<td>Back pain, weight loss, fever, chills, night sweats</td>
<td>NR</td>
<td>Back pain, weight loss, fever, chills, night sweats</td>
<td>NR</td>
<td>Tissue culture from needle biopsy</td>
<td>Nafcillin + Clindamycin</td>
<td>Cure55</td>
</tr>
<tr>
<td>3 (1996) Wenisch C*</td>
<td>19/F</td>
<td>30/F</td>
<td>Aortic valve</td>
<td>Abdominal pain, fever, chills, malaise, weight loss</td>
<td>NR</td>
<td>Abdominal pain, fever, chills, malaise, weight loss</td>
<td>CRP 104 mg/l</td>
<td>Blood cultures (+)</td>
<td>Ceftriaxone + Metronidazole</td>
<td>Cure472</td>
</tr>
<tr>
<td>3 (1996) Stoll F*</td>
<td>24/F</td>
<td>68/F</td>
<td>Knee prosthesis</td>
<td>Knee pain, fever</td>
<td>6</td>
<td>Knee pain, fever</td>
<td>CRP 358 mg/l</td>
<td>Synovial fluid culture</td>
<td>Penicillin</td>
<td>Cure472</td>
</tr>
<tr>
<td>4 (1998) Urcia P*</td>
<td>20/M</td>
<td>51/M</td>
<td>Prosthetic aortic and mitral valve</td>
<td>Asthenia, anorexia, weight loss, fever</td>
<td>14</td>
<td>Asthenia, anorexia, weight loss, fever</td>
<td>CRP 104 mg/l</td>
<td>Blood cultures (+)</td>
<td>Penicillin</td>
<td>Cure472</td>
</tr>
<tr>
<td>5 (2000) Leder KS*</td>
<td>70/M</td>
<td>82/F</td>
<td>Vertebral</td>
<td>Knee pain, fever</td>
<td>70</td>
<td>Knee pain, fever</td>
<td>CRP 12 mg/l</td>
<td>Synovial fluid culture into anaerobic blood bottle</td>
<td>Penicillin</td>
<td>Cure472</td>
</tr>
<tr>
<td>6 (2000) Frt J*</td>
<td>2004</td>
<td>61/F</td>
<td>Vertebral</td>
<td>Dental treatment</td>
<td>90</td>
<td>Dental treatment</td>
<td>CRP 12 mg/l</td>
<td>Blood cultures (+)</td>
<td>Penicillin</td>
<td>Cure472</td>
</tr>
<tr>
<td>8 (2009) Braun T*</td>
<td>2009</td>
<td>49/F</td>
<td>Brain</td>
<td>Focal, headache, vomiting</td>
<td>22</td>
<td>Focal, headache, vomiting</td>
<td>CRP 12 mg/l</td>
<td>Blood cultures (+)</td>
<td>Penicillin</td>
<td>Cure472</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Main findings in 31 patients with infection caused by <em>Parvimonas micra</em> (cont.).</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>11(2010) Minces LR</td>
<td>63/F  Prosthetic mitral valve  NR  NR  Syncope  NR  Blood cultures (+)  Ampicillin/sulbactam Penicillin + gentamycin  Cure/1</td>
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<tr>
<td>12(2013) Ubukata S</td>
<td>46/M  Pulmonary and head and neck  NR  60  Otorrhea, ocular motility disorder, dizziness and loss of appetite  CRP 2.35 mg/l  Blood cultures (+) Otorrhea specimens PCR from sputum, BAL, neck abscess  Meropenem + ampicillin  Cure/1</td>
</tr>
<tr>
<td>13(2014) García González M</td>
<td>62/M  Vertebral  Diabetes mellitus  NR  Back pain, left lower limb weakness  CRP 8.61 mg/l  Percutaneous intervertebral biopsy culture  Clindamycin  Cure/4</td>
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<tr>
<td>14(2014) Gorospe L</td>
<td>67/M  Chest wall  Periodontitis  NR  Cough, constitutional syndrome, pain  NR  Culture from chest wall mass aspiration  Clindamycin  Cure/2</td>
</tr>
<tr>
<td>15(2014) Uemura H</td>
<td>83/M  Vertebral  Periodontitis  NR  Back pain  NR  Vertebral bone biopsy Gene sequencing  Ampicillin/sulbactam Amoxicillin-clavulanate  Cure/10</td>
</tr>
<tr>
<td>16(13/2014) Uemura H</td>
<td>85/F  Vertebral  Periodontitis  NR  Malaise, anoxeea  NR  Blood culture (+) Doripenem Ampicillin Amoxicillin-clavulanate + ofloxacin  Cure/NR</td>
</tr>
<tr>
<td>17(2014) Poetter C</td>
<td>72/M  Pleura  Periodontitis  14  Somnolence, confusion, loss of appetite, fluctuating memory deficits, fever  CRP 2.30.5 mg/l  Pleural drainage culture Amoxicillin-clavulanate  Cure/NR</td>
</tr>
<tr>
<td>18(2015) Jones SL</td>
<td>72/M  Vertebral  Tooth extraction  28  Back pain  CRP 40 mg/l  Tissue culture from a core biopsy Gene sequencing  Piperacillin/tazobactam Amoxicillin-clavulanate  Cure/12</td>
</tr>
<tr>
<td>19(2015) Jones SL</td>
<td>72/F  Vertebral  Corticosteroid treatment  90  Back pain  CRP 69 mg/l  Abscess aspirate culture Piperacillin-tazobactam  Cure/5</td>
</tr>
<tr>
<td>20(2015) Pilmis B</td>
<td>83/M  Vertebral  NR  NR  Back pain  CRP 30 mg/l  Blood cultures (+) 10S culture Amoxicillin + gentamycin Clinda mycin + rifampicin  Cure/6</td>
</tr>
<tr>
<td>21(2015) Ko JH</td>
<td>61/M  Meninges  Tooth extraction Chronic periodontitis  8  Fever, headache  CRP 12.15 mg/l  Blood cultures (+) Gene sequencing Ceftriaxone + vancomycin + ampicillin Metronidazole  Cure/NR</td>
</tr>
</tbody>
</table>
Table 1 | Main findings in 31 patients with infection caused by *Parvimonas micra* (cont.).

<table>
<thead>
<tr>
<th>Reference</th>
<th>Year</th>
<th>Age</th>
<th>Sex</th>
<th>Site</th>
<th>Diagnosis</th>
<th>Duration</th>
<th>Symptoms</th>
<th>CRP</th>
<th>IoS</th>
<th>Antibiotics</th>
<th>Outcome</th>
</tr>
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<tbody>
<tr>
<td>22(2015)</td>
<td>George IA</td>
<td>49/M</td>
<td>Vertebral</td>
<td>Tooth extraction</td>
<td>21</td>
<td>Back pain</td>
<td>CRP 234 mg/l</td>
<td>IoS culture</td>
<td>Ceftriaxone + metronidazole</td>
<td>Cure/3</td>
<td></td>
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<tr>
<td>23(2015)</td>
<td>Gómez CA</td>
<td>71/M</td>
<td>Aortic valve</td>
<td>NR</td>
<td>7</td>
<td>Respiratory distress, pulmonary edema, chest pain, fever</td>
<td>NR</td>
<td>Gene sequencing on aortic valve tissue</td>
<td>Vancomycin + nafcillin + gentamicin Ampicillin/sulbactam</td>
<td>Cure/12</td>
<td></td>
</tr>
<tr>
<td>24(2015)</td>
<td>Gahier M</td>
<td>59/F</td>
<td>Vertebral</td>
<td>Dental caries</td>
<td>42</td>
<td>Cervical pain, fever</td>
<td>NR</td>
<td>Blood cultures (+)</td>
<td>Gentamicin + metronidazole + amoxicillin</td>
<td>Cure/12</td>
<td></td>
</tr>
<tr>
<td>26(2015)</td>
<td>Gahier M</td>
<td>60/F</td>
<td>Vertebral</td>
<td>NR</td>
<td>60</td>
<td>Back pain</td>
<td>NR</td>
<td>Blood cultures (+)</td>
<td>Ceftriaxone + gentamicin Amoxicillin</td>
<td>Cure/12</td>
<td></td>
</tr>
<tr>
<td>27(2015)</td>
<td>Rodríguez-Segade S</td>
<td>43/M</td>
<td>Pleural</td>
<td>Dental caries and periodontitis</td>
<td>90</td>
<td>Dyspnea, productive cough, fever</td>
<td>NR</td>
<td>Pleural effusion culture</td>
<td>Linezolid + imipenem Amoxicillin-clavulanate</td>
<td>Cure/12</td>
<td></td>
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<tr>
<td>28(2015)</td>
<td>Endo S</td>
<td>55/F</td>
<td>Vertebral</td>
<td>Dental treatment</td>
<td>60</td>
<td>Back pain</td>
<td>CRP 8 mg/l</td>
<td>IoS cultures</td>
<td>Epidural abscess culture Gene sequencing</td>
<td>Ampicillin/sulbactam Metronidazole</td>
<td>Cure/12</td>
</tr>
<tr>
<td>29(2016)</td>
<td>Baghban A</td>
<td>65/M</td>
<td>Knee</td>
<td>Dental treatment, periodontitis</td>
<td>1</td>
<td>Knee pain</td>
<td>CRP 295 mg/l</td>
<td>Synovial fluid culture</td>
<td>Clindamycin Ampicillin/sulbactam</td>
<td>Cure/12</td>
<td></td>
</tr>
<tr>
<td>30(2016)</td>
<td>Dietvorst M</td>
<td>68/F</td>
<td>Knee</td>
<td>NR</td>
<td>3</td>
<td>Knee pain, fever</td>
<td>CRP 169 mg/l</td>
<td>Synovial fluid culture + Gene sequencing</td>
<td>Flucloxacillin Clindamycin</td>
<td>Cure/12</td>
<td></td>
</tr>
<tr>
<td>31(2016)</td>
<td>Cobo F</td>
<td>75/F</td>
<td>Pleura</td>
<td>Diabetes mellitus Mechanical ventilation</td>
<td>10</td>
<td>Pleural effusion</td>
<td>CRP 480 mg/l</td>
<td>Pleural drainage culture</td>
<td>Piperacillin/tazobactam + daptomycin</td>
<td>Cure/12</td>
<td></td>
</tr>
</tbody>
</table>

M: male; F: female; PR: present report; NR: not reported; CRP: C-reactive protein (acceptable values 0.02–5 mg/dl); IoS: intraoperative sample; CSF: cerebrospinal fluid; PCR: polymerase chain reaction; BAL: bronchoalveolar lavage.
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Infections caused by Parvimonas micra were poorly reported, so a detailed account of the microbiological methods would be useful for future studies.

CRP level can also be used as infection marker, and may be included in the diagnostic algorithm. CRP is mainly limited by their poor specificity, but out of 17 patients in the present series for whom CRP studies were requested, all of them had elevated CRP levels, which might suggest the presence of infection. According to our results, this parameter may be useful detecting an initial infection.

The treatment of choice for P. micra infections has not yet been established, although overall this pathogen is highly susceptible to antibiotics. A recent study shows only one strain of P. micra resistant to metronidazole, but no other significant resistances were found. At the same year, other study found 2.7% resistance to amoxicillin and none to metronidazole. In the case reports here included, there was resistance only to metronidazole in one strain. Furthermore, patient number 19 had resistance to penicillin, amoxicillin/clavulanic acid, metronidazole, meropenem, moxifloxacin and cefoxitin. Treatment with antimicrobial agents has been reported to be successful in all patients here included. In the majority of patients with P. micra infection more than one drug was used for treatment (26/83.8%), but this fact may be due to the use of various antibiotics as empirical treatment until obtaining the culture results.

However, the heterogeneity of studies prevents any conclusion being drawn on antimicrobial treatments. Initially, antimicrobial resistance in P. micra is not considered a problem, but monitoring through susceptibility testing is advisable.

Infections caused by P. micra are rare and require a high index of suspicion because of their non-specific symptoms and insidious evolution. The diagnosis may be suspected by elevation of CRP and/or ESR especially in patients with dental procedures and must be confirmed microbiologically, taking samples of blood, organic fluids and/or intraoperative tissues from affected areas. Although nowadays resistance to antibiotics is not an emerging problem to the species P. micra, antimicrobial susceptibility testing of Parvimonas strains is highly recommended in order to make a correct therapy. There is no a treatment of choice for this infection, but it seems that some strains of Parvimonas may be resistant to metronidazole, so this drug could be avoided as empiric therapy until the susceptibility testing results.

CONFLICT OF INTEREST

Authors declare no conflict of interest.

FUNDING

None

REFERENCES


