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Letter to the Editor

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Bacteremia caused by *Eikenella corrodens* in a patient with pelvic inflammatory disease

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Sir,

Eikenella corrodens is a HACEK group microorganism belonging to the *Neisseriaceae* family. This slow-growing bacteria is a facultative anaerobic, non-motile Gram-negative rod, that is part of of human oropharyngeal and genitourinary microbiomes. However, the pathogenicity of the species has not to be overlooked as *E. corrodens* is one of the mayor actors driving the periodontal disease and other severe infections. The species was named after the ability to corrode the agar that up to 50% present [1]. Colonies have a characteristic bleach-like odor and might occasionally present a light alpha-hemolysis. In this manuscript, we present a bacteremia caused by *E. corrodens* in a patient with pelvic inflammatory disease.

A 49-year-old woman attended the emergency department with a 72-hour febrile syndrome associated with abdominal pain and hyperemesis. The physical examination located the pain on the left flank and the Blumberg's sign was positive. The Blood tests presented an elevated C-reactive protein (24 mg/dL) and a discrete leukocytosis (18,600 leukocytes μl^{-1} with 91% neutrophils). The patient had an intrauterine device (IUD) and the transvaginal ultrasound was showed a trabeculated elongated image of 76 x 35 mm with diffuse echoes inside, compatible with a pyosalpinx in the left adnexal area, as well as a heterogeneous image of 81 x 60 mm compatible with a tuboovarian abscess in the right adnexal area. Computed tomography (CT) (Figure 1) confirmed the ultrasound findings, so the patient was admitted to the gynecological ward. Vaginal and endocervical samples were obtained, and IV therapy with 4 g/500 mg of piperacillin-tazobactam every 8h was initiated.

After 48 hours and due to the persistence of fever and the torpid evolution blood cultures were obtained and a subtotal hysterectomy and double laparotomic adnexectomy was performed. During the surgery, adhesions of intestinal loops to the uterine fundus and bladder plica were found, as well as bilateral tuboovarian abscesses of approximately 7 cm each (the right one adhered to the posterior uterine face and the left one adhered to the Douglas pouch fundus. Intraoperatory samples were taken from one of the abscesses and sent to the microbiology laboratory for microbiological identification.

The intraoperatory sample was inoculated on chocolate, TSA with 5% sheep blood, CNA, McConkey and Brucella agars, as well as on Thioglycollate enrichment broth. However, after 7 days of incubation, no growth was observed. The blood culture was positive after 5 days of incubation and Gram staining showed Gram-negative bacilli andit was subcultured on chocolate, TSA with 5% of sheep blood and McConkey agars in aerobiosis with 5% of CO_2. After 48-72h a subtle growth of pale yellow colonies on TSA and chocolate agars (Figure 2) was observed. These colonies were embedded in the agar, had a distinct hypochlorite odor and were oxidase positive and catalase negative. The BD Phoenix^R system was not able to identify the bacterial species and therefore 16S rRNA gene sequencing was performed directly from the blood culture, obtaining a sequence that aligned with *E. corrodens* with a homology percentage of 99.37%. The sequence was registered in GenBank with accession number OP679804. The susceptibility of the strain was studied using gradient strips on fastidious Muller-Hinton agar, resulting susceptible to fluoroquinolones and all beta-lactams but ampicillin, as well as resistant to clindamycin.

After one week of IV antibiotic therapy and given the good clinical evolution, the treatment was sequenced to oral therapy with 875 mg/125 mg/8 hours of amoxicillin-clavulanic acid, fulfilling 2 weeks of antibiotic treatment in total.

Periodontitis and opportunistic infections are frequently caused by *E. corrodens*, with a tendency to cause abscesses in very variate locations , but most frequently on the head and neck [1-3]. Although normally most infections are benign

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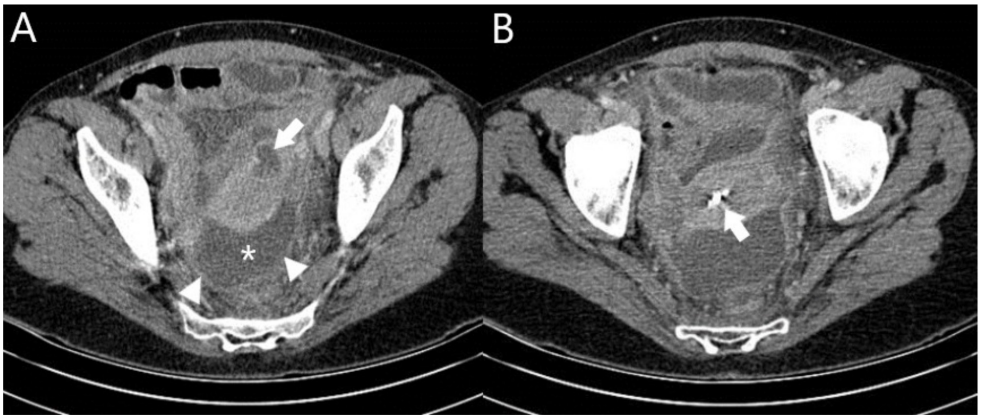

Figure 1 | **A) Axial slice of a pelvic CT after IV contrast that shows fluid (asterisk), peritoneal enhancement (arrowhead) and a tuboovarian abscess on the left (arrow). B) Lower slice shows IUD (arrow).**

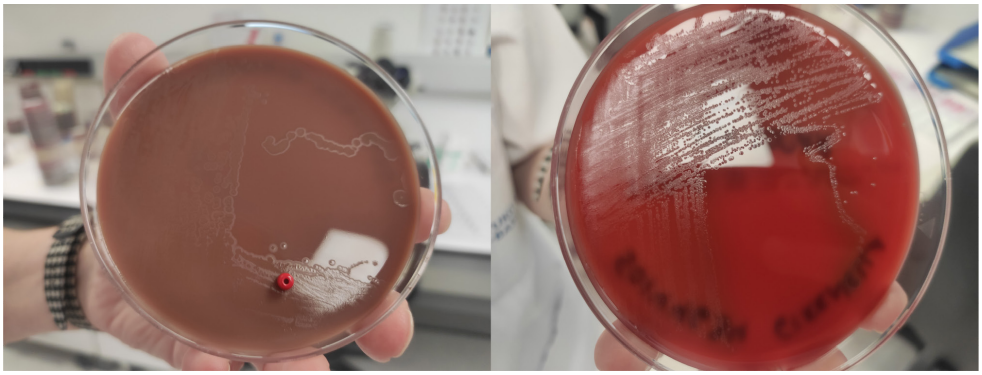

Figure 2 | **Slow growth of pale yellow colonies on TSA and chocolate agars was observed after 48 h/72h of incubation. Identification was confirmed by 16S rRNA sequencing as *Eikenella corrodens* with an homology percentage of 99.37%.**

and indolent, invasive and recurrent infections, such perirenal abscesses, vertebral osteomyelitis or endocarditis have been reported; [4-6]. Gynaecological infections such as chorioamnionitis or tubo-ovarian abscesses caused by *E. corrodens* are rare, but these have been described mostly in women using IUD [7-9].

This fastidious, slow-growing bacteria frequently causes polymicrobial infections and may be underdiagnosed as it is frequently outgrown by coinfecting microorganisms in standard culture media [2,9]. On the other hand, *E. corrondens* can grow exponentially when *Streptotoccus spp.* of various strains are present [10]. Before the appearance of MALDI-TOF mass spectrometer, the identification of *E. corrodens* was performed according to the type of growth on agars and through biochemical tests or 16S rARN sequencing, extending the identification time. MALDI-TOF MS represents an accurate, rapid and inexpensive tool for the detection of slow-growing and fastidious pathogen. Its utility in the identification of microorganisms from the HACEK group has been proved previously with good results [11].

It is vital to emphasize the importance of taking microbiological samples before starting antibiotic treatment to not to delay diagnosis. Even more so when the infection is caused by a microorganism with a demanding growth such as *E. corrodens*, whose identification was a laborious process before the appearance of the MALDI-TOF mass spectrometer. In the present case, the clinical situation did not allow to delay the antimicrobial therapy until the drainage of the collections, however, blood cultures should have been extracted upon arrival at the emergency department.

E. corrodens is usually susceptible to beta-lactams, fluoroquinolones and tetracyclines. Some strains can produce β-lactamases, whereas all strains are intrinsically resistant to clindamycin and metronidazole [12,13]. In addition, *E. corrodens* present low rates of *in vitro* susceptibility to to erythromycin and aminoglycosides. However, despite appropriate

antimicrobial therapy, infections caused by this microorganism are prone to relapse, especially when the duration of the antimicrobial therapy is insufficient or the collections are not drained [14]. Early control of the focus in these infections is essential to avoid serious complications such as bacteremia or septic shock. However, in the presented however a conservative approach was decided and the surgery was postponed 24/48 h, hoping that the intravenous therapy could stabilize the patient.

E. corrodens is a commensal of the human body, but when translocated to other anatomical sites it cause severe infections. Therefore, it is very important to correctly isolate this microorganism and know its role in gynaecological infections to achieve a proper treatment.

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None to declare

CONFLICT OF INTEREST

Authors declare have no conflict of interest

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