Sir,

*Trueperella bernardiae* is a facultative anaerobic gram-positive cocacobacillus which is part of the normal microbiota of human skin and the oropharynx. This microorganism is well known for its very slow growth. It has been reported in only a few cases of human infection, especially in wound and prosthetic joint infections [1-3]. On the other hand, *Actinotignum sanguinis* is a small facultative anaerobic gram-positive rod which forms part of the normal urogenital flora. They grow slowly and especially under anaerobic or in atmosphere enriched with CO₂. *Actinotignum* species have been rarely associated with urinary tract infections [4] and bacteremia [5].

We report a rare case of breast abscess caused by these two pathogens. To our best knowledge, this is the first report of breast abscess caused by these two microorganisms together. Table 1 shows all published cases of *T. bernardiae* and/or *A. sanguinis* infections.

A 39-year-old woman refers ten days history of pain and local swelling in her right breast. Her clinical history was unremarkable, and she was in treatment with cloxacillin (1g /8h) for seven days. The abscess was drained by puncture and the fluid obtained sent to the microbiology laboratory for culture. The sample was inoculated in blood agar (both aerobic and anaerobic) (BD Columbia Agar 5% Sheepblood®, Becton Dickinson) chocolate agar (BD Choco Agar, Becton Dickinson), thioglycolate broth (BD™ Fluid Thioglycolate Medium, Becton Dickinson), Mannitol agar (BD Mannitol Salt, Becton Dickinson) and MacConkey (BD Mac Conkey II, Becton Dickinson).

Gram stain of the abscess showed gram positive bacilli, and on the second day of incubation two types of colonies grew on both aerobic and anaerobic blood agar and chocolate agar. They were identified with MALDI-TOF MS (Bruker Biotyper, Billerica, MA, USA) as *Trueperella bernardiae* (score 2,13) and *Actinotignum sanguinis* (score 2,22). The MIC of different antibiotics was carried out by the E-test method in Brucella agar supplemented with hemin, vitamin K1 and lacked sheep blood incubated at 37°C. As no specific clinical breakpoints have been established for *T. bernardiae* and *A. sanguinis*, we used the EUCAST PK/PD (non-species related) clinical breakpoints. *T. bernardiae* was susceptible to ciprofloxacin (0.5 mg/L), gentamicin (1.5 mg/L), imipenem (0.016 mg/L), linezolid (0.25 mg/L), penicillin (0.032 mg/L), rifampicin (<0.016 mg/L), tetracycline (0.094 mg/L), vancomycin (0.19 mg/L), and resistant to trimethoprim-sulfamethoxazole (>32 mg/L), clindamycin (1 mg/L) and erythromycin (1 mg/L). *A. sanguinis* was susceptible to ciprofloxacin (0.5 mg/L), gentamicin (<0.016 mg/L), linezolid (0.047 mg/L), penicillin (<0.016 mg/L), vancomycin (<0.016 mg/L), and resistant to trimethoprim/sulfamethoxazole (>32 mg/L), clindamycin (>256 mg/L) and erythromycin (>256 mg/L). Antimicrobial treatment was changed to amoxicillin-clavulanic (875/125 mg/8h) for 10 days, and at three months of follow-up the woman was asymptomatic.

The diagnosis of *T. bernardiae* and *A. sanguinis* is based on a culture of an adequate sample. Identification using conventional laboratory methods could be difficult and when isolated in clinical samples these microorganisms are usually not identified, especially *T. bernardiae* due to its coryneform aspect. The recent introduction of mass spectrometry for routine analysis in the clinical laboratories may help in the final identification of these pathogens, and can help to know the true incidence of infections with these bacteria. For this reason it is highly recommended to use the MALDI-TOF method for identification.

Overall, drug resistance in *T. bernardiae* and *A. sanguinis* may be not considered still a problem. According to different studies, *T. bernardiae* was susceptible to all antimicrobials tested, except to ciprofloxacin [6, 7]. On the other hand, the genus *Actinotignum* has demonstrated high resistance against all antimicrobials tested.
Table 1  Cases with infection caused by Trueperella bernardiae and/or Actinotignum sanguinis.

| Patient (year of publication) | Age (years)/sex | Microorganism | Localization of infection | Microbiological diagnosis |
|------------------------------|-----------------|---------------|--------------------------|--------------------------|
| 1 (1996) Ieven M             | 69/M            | Actinomyces bernardiae | Urinary tract           | Urine, perirenal abscess and necrotic tissue cultures; Blood culture (+) |
| 2 (1998) Adderson EE         | 19/F            | Arcanobacterium bernardiae | Hip                     | Synovial fluid culture   |
| 3 (1998) Lepargneur JP       | 75/M            | Arcanobacterium bernardiae | Urinary tract           | Urine culture            |
| 4 (2009) Bemer P             | 63/M            | Arcanobacterium bernardiae | Knee                    | Intraoperative specimen   |
| 5 (2009) Loizé C             | 78/M            | Arcanobacterium bernardiae | Hip prosthesis          | Intraoperative specimen   |
| 6 (2010) Sirijatuphat R      | 60/M            | Arcanobacterium bernardiae | Kidney                  | Perinephric drainage culture |
| 7 (2010) Clarke TM           | 62/F            | Arcanobacterium bernardiae | Skin abscess            | Abscess and tissue cultures |
| 8 (2011) Weitzel T           | 72/F            | Arcanobacterium bernardiae | Blood                   | Blood cultures (+)       |
| 9 (2013) Otto MP             | 78/F            | Trueperella bernardiae  | Wound                   | Ulcer culture            |
|                              |                 | Bacteroides fragilis    |                         | Blood cultures (+)       |
|                              |                 | Enterococcus avium      |                         |                          |
| 10 (2015) Parha E            | 68/F            | Trueperella bernardiae  | Brain                   | Abscess culture          |
|                              |                 | Peptoniphilus harei     |                         |                          |
| 11 (2015) Schneider UV       | 45/M            | Trueperella bernardiae  | Skin ulcers             | Ulcer tissue culture     |
|                              |                 | Peptoniphilus lacrimalis|                         |                          |
| 12 (2016) Rattes ALR         | 24/F            | Trueperella bernardiae  | Wound                   | Umbilical secretion culture |
| 13 (2016) Gilarranz R        | 73/F            | Trueperella bernardiae  | Knee prosthesis         | Synovial fluid culture   |
|                              |                 |                         |                         | Blood cultures (+)       |
| 14 (2016) VanGorder B        | 77/F            | Trueperella bernardiae  | Skin                    | Drainage abscess culture |
| 15 (2017) Cobo F             | 68/F            | Trueperella bernardiae  | Wound                   | Wound secretion culture  |
| 16 (2017) Cobo F             | 70/F            | Trueperella bernardiae  | Inguinal granuloma       | Wound secretion culture  |
|                              |                 |                         |                         |                          |
| 17 (2017) Pedersen H.        | NR              | Actinotignum sanguinis  | Blood                   | Blood cultures (+)       |
| 18 (PR/2018) Calatrava E     | 39/F            | Trueperella bernardiae  | Breast abscess          | Drainage abscess culture |
|                              |                 | Actinotignum sanguinis  |                         |                          |

M: male; F: female; NR: not reported; PR: present report

Susceptibility to β-lactams and vancomycin [5]. In other study, 12 isolates of Actinotignum spp. were susceptible to penicillin [8]. However, treatment of choice for these microorganisms has not been clearly established due to the scarcity of data and the absence of breakpoints for these bacteria. Further studies are necessary in order to establish the best therapeutic option.

In summary, it is still unknown the true clinical implications of T. bernardiae and A. sanguinis, but with the generalized use of MALDI-TOF in the majority of laboratories, the diagnosis of these pathogens implicated in human infections probably will increase. Microbiologists should be aware of these microorganisms especially if the new diagnostic techniques area applied.

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CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest

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