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CATEGORY: Case report

TITLE: *Sneathia amnii*, an unusual pathogen in spondylitis : a case report

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ABSTRACT

Sneathia amnii is an opportunistic pathogen of the female reproductive tract that has been reported to cause infections during pregnancy and in the post-partum period. Infections outside the reproductive tract have rarely been described. We report the case of a spondylitis due to *S. amnii* in a 72-year old woman, successfully treated with a course of antibiotic therapy for 7 weeks. Growth of this pathogen guided our diagnosis towards a gynecological pathology; we discovered an endometrium adenocarcinoma. This case emphasizes the need for adequate incubation of discal biopsies, both using aerobic and anaerobic enrichment broth and prolonging delay of culture of negative samples.

KEYS WORDS : *Sneathia amnii*; Spondylitis; Endometrium adenocarcinoma; 16S rDNA sequencing; Case report

1. Introduction

Sneathia amnii (formerly *Leptotrichia amnionnii*) is a fastidious anaerobic Gram-negative rod considered as an opportunistic pathogen of the female reproductive tract. *Sneathia* species have been associated with bacterial vaginosis and with various obstetric complications including spontaneous abortions, preterm labor and post-partum bacteremia [1]. Infections outside the reproductive tract have rarely been described. We report a case of *S. amnii* spondylitis linked to an endometrium adenocarcinoma and review the literature on this pathogen.

2. Case report

A 72-year old woman with a previous history of heart disease and type 2 diabetes was admitted to the emergency department for a disabling back pain evolving for one week, not controlled by morphine. She did not report deterioration of her general condition. On admission, she presented with fever (38.3°C), lower back and paravertebral pain, without sepsis nor neurological signs. Laboratory tests showed biological inflammatory syndrome (C-Reactive Protein at 142 mg/L), hyperleukocytosis (19690/mm³), anemia (9,9 g/dL). Dorsolumbar MRI showed a L3-L4 spondylitis with a small anterior abscess, infiltration of the psoas and epiduritis. Blood cultures (Bact-Alert3D; BioMérieux, Marcy l'Etoile, France) remained sterile. Discal biopsies were sampled. An inflammatory tissue with many neutrophils was described by anatomopathologic analysts. In bacteriology, a Gram-negative nonmotile bacilli grew in Wilkins-Chalgren anaerobic broth at the third day of incubation while aerobic broth remained sterile. Subculture was performed on Columbia agar with blood 5% anaerobically incubated at 35°C for 6 days. On blood agar, colonies were flat, crystalline α -hemolytic, with a diameter of approximatively 1 mm. Catalase and oxidase were negative. On the Gram stain, bacteria appeared as long and short Gram-negative rods (Figure A). Bacteria were identified as *S. amnii* using MALDI-TOF spectrometry mass (Bruker Daltonics,

Wissembourg, France) and 16S rDNA sequencing (377 ABI Prism; PE Applied Biosystems, Foster City, CA., USA). *In vitro* susceptibility tests performed by disk diffusion method with an inoculum of 1 McFarland on Brucella agar with vitamin K1 and blood 5%, according to the procedure and interpretation criteria proposed by the Comité de l'Antibiogramme de la Société Française de Microbiologie (CA-SFM EUCAST 2019) (<http://www.sfm-microbiologie.org>), showed susceptibility to amoxicillin-clavulanic acid, tetracycline, clindamycin, rifampicin, and metronidazole. New discal biopsies were sampled 4 weeks later. The same bacteria yielded in 14 days in the anaerobic broth and the subculture in 12 days more on Columbia agar with 5 % blood. Both vertebral biopsies cultures being positive with *S. amnii* alone, since gynecological entrance wound was highlighted in the patient, the contribution of other micro-organisms such as streptococcus and other anaerobic bacteria remained unclear but plausible and was considered for antimicrobial therapy. The presence of complications with abscess and epiduritis was also taken into account. Treatment was initiated with association of intravenous amoxicillin-clavulanic acid and metronidazole for 10 days to enlarge microbiological spectrum, further replaced by clindamycin plus metronidazole for 6 weeks since psoas abscess and epiduritis had promptly disappeared. Because of these microbiological findings and given that *S. amnii* is part of the genital tract, a gynecological examination was performed: a large uterine fibroid was discovered, later identified as an endometrium adenocarcinoma, with a significant increase of CA125 level (86 U/mL). The patient later revealed that she had metrorrhagia since one year.

3. Discussion

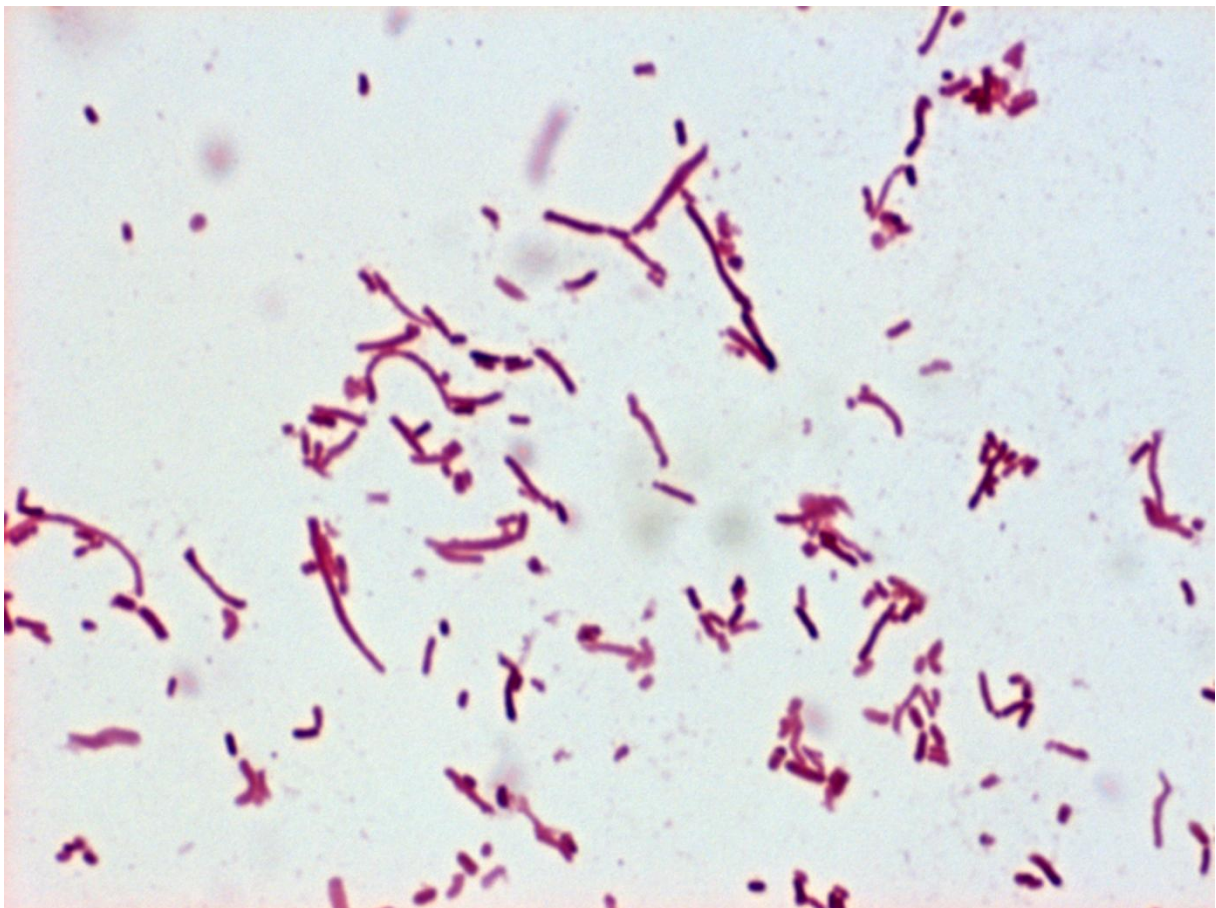
The review of the literature on *S. amnii* related various cases of infections associated with the female genital tract or delivery : upper genital tract infections, chorioamnionitis, abortion, stillbirth, postnatal sepsis and neonatal infections such as meningitis [2,3,4,5]. Only few cases of infections outside the urogenital tract have been described : an urinary tract infection in a renal transplant [6], a renal abscess occurring 5 weeks after vaginal delivery [7], an arthritis in a diabetic and hemodialysis man [8], an epidural abscess following hysteroscopy [9] and a spondylitis in a context of endometrium adenocarcinoma (our case) .

To our knowledge, our description is the first of a *S. amnii* spondylitis in a patient with gynecological cancer. *In vitro*, Harwich et al. pointed out *S. amnii* ability to adhere and its high cytotoxic potential for cervical epithelial cells [1]. Recent studies evoked increase of *Sneathia* sp. in vaginal flora of patients with cervical cancer [10-12]. However, these observations need to be strengthened and may not be transposable to endometrium adenocarcinoma.

Anaerobes are rare causes of spondylitis since they are observed in less than 4% of cases [13, 14]. Indeed, *Staphylococcus aureus* is the predominant pathogen accounting for half of non-tuberculosis spondylitis, followed by *Enterobacteriaceae*, *Pseudomonas aeruginosa*, coagulase-negative staphylococci and streptococci [13]. Blood cultures are the first way to obtain a microbiological diagnosis of spondylitis and were positive in 66.0% out of the 194 documented cases in the serie by Amsilli et al. These authors recommend to perform vertebral biopsies as a second line technique since they documented 89.4% of cases without positive blood culture, and particularly, yielded all anaerobes of their serie [14]. In other studies, 39% of biopsy cultures in suspected cases of spondylitis were negative [13]. In this context, anaerobes such as *S. amnii* may be underestimated organisms since they are fastidious and slow-growing bacteria. Some authors thus consider use of broad range PCR as a valuable

adjunct to standard cultures for culture-negative vertebral biopsies [13]. To our view, it mostly emphasizes the need for adequate incubation of these samples, both using aerobic and anaerobic enrichment broth and prolonging delay of culture of negative samples. Indeed, in our case, culture of *S. amnii* has been essential for gynecological cancer diagnosis (since it has led us to perform a gynecological examination), more than for spondylitis treatment (since it is a very antibiotic-susceptible bacterium).

FIGURE A



Gram stain of *Sneathia amnii*. Gram stain from colonies on blood agar, image taken at magnification 1000x. Presence of long and short Gram-negative rods.

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