

***Bacterioides fragilis* Isolated from Blood Culture. First Case In Our Hospital**

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Abstract

The latest guidelines indicate that both an aerobic and an anaerobic bottle should be present in a blood culture set. In our laboratory, aerobic and anaerobic bottles have been used together for more than 10 years.

Here we report a case of *Bacterioides fragilis* isolated from blood culture of an 88-year-old patient with colon adenocarcinoma. Although this isolate could not be shown to be the causative agent of true bacteremia, it being the first anaerobic agent isolated from blood culture in our laboratory, we aimed to draw attention to the importance of using anaerobic blood culture bottles in blood culture sets.

Keywords: *Bacterioides fragilis*, blood culture, anaerobic

Резюме

Най-новите изследвания показват, че в набор за кръвни култури трябва да присъстват както аеробни, така и анаеробни бутилки. В нашата лаборатория двата вида бутилки се използват заедно повече от 10 години. Тук докладваме случай на *Bacterioides fragilis*, изолиран от кръвна култура на 88-годишен пациент с аденокарцином на дебелото черво. Въпреки че, този изолат не може да се окаже причинител на истинска бактериемия, тъй като това е първият анаеробен агент, изолиран от кръвната култура в нашата лаборатория, си поставихме за цел да привлечем вниманието към значението на използването на анаеробни бутилки в комплекти за кръвна култура.

Introduction

Bacterioides fragilis; an important non-spore forming gram-negative obligate anaerobic pathogen, is a predominant member of the human gastrointestinal microbiota. Although being commensal, they can be opportunistic pathogens that cause life-threatening infections like peritonitis, abscesses and bacteremia (Sárvári *et al.*, 2017).

B. fragilis is usually sensitive to metronidazole, carbapenems and beta lactam antibiotics. Although single antibiotic resistant strains have been reported, multi-drug resistant strains are very rare. (Nagy *et al.*, 2011; CDC, 2013).

Here, we report a case of *B. fragilis* isolated from blood culture in our hospital for the first time.

Case Presentation

An 88-year-old man with Alzheimer disease admitted to our hospital with complaints of somnolence, general impairment and decreased oral intake.

He was hospitalized with the pre-diagnosis of acute renal failure as his blood sodium and creatinine were detected as 154 mEq/L and 2.9 mg/dL, respectively. After hospitalization, pneumonia was diagnosed, moxifloxacin was prescribed, and piperacillin-tazobactam was added to the therapy on the fifth day of hospitalization due to his ongoing fever. Urine and blood cultures were performed. There was no growth in urine culture and *Staphylococcus intermedius* was isolated from the blood culture. Daptomycin was added to the therapy. Colonoscopy and biopsy was performed on suspicion of

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colon cancer, when gastrointestinal bleeding was detected. On the seventh day of meropenem and fifth day of daptomycin, another set of blood culture (1 aerobic, 1 anaerobic) was obtained.

The blood culture sample was incubated in a Bactec FX200 (BD, USA) automated system. After 4 days of incubation, a positive signal was detected in the anaerobic bottle. Gram stain and subcultures were performed. Gram-negative thin bacilli were observed by Gram stain whereas no growth was observed on the blood and EMB agars which were incubated aerobically. As the specimen from the anaerobic bottle was again subcultured into an aerobic and anaerobic bottle and same result was obtained, presence of an anaerobic agent was suspected and the blood culture bottle was sent to another center for further anaerobic identification. After anaerobic isolation, the strain was identified as *B. fragilis* by MALDI-TOF MS (Bruker, Germany). Pathology was detected as intramucosal adenocarcinoma. Colonoscopy may cause bacteremia because it disrupts the integrity of the intestine, but this case was not thought to be related to the procedure since it was taken before colonoscopy. There was no growth in repeated blood cultures and the patient was transferred to a palliative care giving center.

Discussion

B. fragilis is the most common anaerobic bacteria isolated from a blood culture with high resistance percentage to penicillins, cephalosporins and tetracycline, moderate resistance percentage to cefoxitin, clindamycin and moxifloxacin, and low resistance percentage to carbapenems, beta-lactam/-lactamase combinations, metronidazole and tigecycline are detected (Snydman *et al.*, 2010; Brook, 2016). *B. fragilis* produce metallo- β -lactamase, encoded by the *cfiA* gene (Thompson and Malmay, 1990). Ulger Toprak and colleagues in their study detected carbapenemase metallo- β -lactamase gene (*cfiA*) in 27% of anaerobic isolates, all of which were *B. fragilis* (Ulger Toprak *et al.*, 2004). Here in this case, isolation of *B. fragilis* during meropenem treatment indicated the possibility of carbapenemase production of the isolate.

An anaerobic blood culture is mostly helpful when the patient is immunocompromized, and obligate anaerobic bacteremia is suspected.

In our country, the rate of anaerobic growth in blood cultures varies between 0.4-4%. (Kiremitçi, 2008; Akyar and Yaman, 2011). Although the use of anaerobic bottles has been questioned previously, in recent studies and guidelines the use of both

aerobic and anaerobic bottles has been mentioned meaningfully both in terms of detecting contaminants, anaerobic and facultative anaerobic bacteria (Akyar and Yaman, 2011). In our laboratory we have been using both aerobic and anaerobic bottles together for more than 10 years.

Although this isolate could not be shown to be the causative agent of true bacteremia, it being the first anaerobic agent isolated from blood culture in our laboratory, we aimed to draw attention to the importance of using anaerobic blood culture bottles in blood culture sets.

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