Bacillus Circulans Paracardiac Infection in Non-Hodgkin Lymphoma – A Case Report

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Abstract: A case report is presented concerning *Bacillus circulans* paracardiac infection in a 27 year old woman with non-hodgkin lymphoma.

Introduction
Bacillus species, which has been often considered as laboratory contaminant only, should be considered as a pathogen in immunosuppressed patients. Paper presents such pathogen in a patient after stem cell transplantation.

Case report
Because of their ubiquity in the environment, the recovery of *Bacillus* species from clinical specimens has most frequently been considered as nuisance contamination. However the increasing frequency of reports in the literature of *Bacillus* species as agents of disease in immunosuppressed hosts suggests that these organisms should not be dismissed as contaminants in all cases. Serious *Bacillus* species infections have been associated with operative procedures, immunosuppression, traumatic wounds, burns, haemodialysis, and parenteral drug abuse [5]. We present a case of paracardiac infection due to *B. circulans*.

A 27 year old woman who had backaches for 5 months presented to haematology-oncology unit with persistent cough. A mediastinal bulky mass (16 cm) was noted in thorax computer tomography. The patient was diagnosed as Stage IA Mediastinal Diffuse Large B Cell Non Hodgkin Lymphoma following mediastinoscopic biopsy of the mass in October 2004.

She was treated with 8 cycles of R-CHOP followed by involved field radiotherapy to the mediastinum at a dose of 4400 cGy in June 2005.

The patient experienced recurrence of her lymphoma in August 2005, determined by a positron emission tomography (PET-CT) which revealed a 5 cm mass adjacent to the previously irradiated region.

She was treated with 2 cycles of R-IIVP salvage chemotherapy regimen in August-September 2005. High dose Etoposide (2000 mg/m²) administered in November 2005. The patient underwent high dose chemotherapy followed by autologous stem cell transplantation procedure on December 23rd 2005. She engrafted on January 4th 2006 and was discharged on post-transplant day + 30 without significant organ toxicity.

During evaluation of persistent backache and cough, a new anterior mediastinal paracardiac FDG avid mass (SUV max: 4,79) was discovered by a PET-CT scan on January 19th 2006, while prior mass due to lymphoma has been resolved. (Figure 1) PET-CT-guided biopsy and aspiration of this new mass was done. Histological examination of the aspirate revealed presence of inflammatory cells consisting of neutrophils and macrophages.

The biopsy material was evaluated in the microbiology laboratory. The sample was incubated at 37°C for 24 hours after inoculating at blood, chocolate and EMB agar plates. After 24 hours the colonies were stained by Gram stain and Gram

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positive bacilli with spores were seen (Figure 2). For identification BBL Crystal (Becton Dickinson, USA) GP panel was used and the bacilli were identified as *Bacillus circulans*. The biochemical properties such as arginine dihydrolase (ADH), indole, nitrate reduction and gelatine hydrolysis were tested by API 20E (Biomerieux, France) for differentiation of the other Bacillus species [6]. The antibiotic susceptibility with Kirby-Bauer disk diffusion method was made and found susceptible to the antimicrobial agents including ampicillin sulbactam, ciprofloxacin, eritromycin, levofloxacin, penicillin, trimethoprim sulphametoxazole, linezolide, clindamycin, rifampin, vancomycin, teicoplanin and telitromycin.

The patient was treated with levofloxacin for 5 months. The SUV max of the mass determined by consecutive PET-CT scans decreased to 3.61 on March 9th 2006 and revealed complete recovery on June 26th 2006 with negative culture results.

*Bacillus* spp. is widely distributed in the environment. Recognition of the pathogenic potential of *Bacillus* spp. has been delayed, in part, because of the tendency to dismiss aerobic spore-bearing bacilli as contaminants in laboratory cultures. However, they are being more frequently recognized as pathogens in immunosuppressed hosts or in patients with cancer and central venous catheters. There are limited numbered case reports and studies about *B. circulans* infections have been reported in literature since 1966.

Castagnola et al. [3] documented unusual pathogens including *B. circulans* among 102 episodes of intravenous catheter related bacteraemias in children receiving antineoplastic chemotherapy or bone marrow transplantation. In eighteen febrile patients, Banerjee et al. [1] experienced 24 episodes of Bacillus bacteremias including B.circulans. There are also very rare cases like an endophthalmitis case presented by Tandon et al. [7] due to *B. circulans* after uncomplicated right cataract surgery; peritonitis case in a patient treated with CAPD by Berry et al. [2], Cotton et al. [4] studied among 17 positive blood cultures for Bacillus spp. Of these patients fifteen had malignancies.

It seems difficult to suspect the importance of *Bacillus* species mostly presented as contaminants in routine studies. Although the automated identification systems can easily detect *B. circulans*, the biochemical properties should be evaluated to differentiate from the other Bacillus species. This is especially important in immunosuppressed patients since they should receive the specific appropriate antibiotic as rapidly as possible. Our case is just an example for such patient group due to a mediastinitis of an autologous stem cell transplantation patient. We had found no other reports such as our case as far as we searched.

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References


