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HEMORRHAGIC PERICARDIAL EFFUSION IMPENDING TAMPONADE ASSOCIATED TO *BURKHOLDERIA CEPACIA*

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INTRODUCTION

Burkholderia cepacia complex (Bcc) is recognized as an important opportunistic pathogen in immunocompromised, cystic fibrosis (CF), chronic granulomatous disease patients. It is also an important nosocomial pathogen in hospitalized patients, causing life-threatening bacteremia, urinary tract infections and respiratory tract infections because of high intrinsic antibiotic and disinfectant resistance.[1,2] Though there are reports of nosocomially acquired Bcc infection in immunocompetant patients.[3] Pericardial effusion caused by Bcc is rarely reported in literature.

Cases of Bcc related hemorrhagic pericardial effusion and pyothorax in an immunocompetent child and in an adult patient with HIV infection, without structural lung disease have been previously reported.[4,5] To date and to the best of our knowledge pericardial effusion caused by Bcc in adult immunocompetent patient has not been reported.

CASE HISTORY

We here describe a case of pericardial effusion associated to *Burkholderia cepacia* who presented to the emergency department of Sher-I-Kashmir Institute of Medical Sciences, Kashmir, India. The patient was a 55 year old immunocompetent hypertensive female who came with the chief complaints of breathlessness, chest tightness, decreased appetite and fatigue since last 10 days. The patient recalled of having a minor respiratory tract infection two weeks back for which she was treated accordingly.

At the time of current presentation, the patient was a febrile with a heart rate of 100 beats /minute and blood pressure of 100/60 mm Hg. On examination of the Cardiovascular system positive findings included tachycardia,raised jugular venous pressure, no murmur or gallop was found on auscultation. On Chest auscultation breath sounds were audible on both sides.

Without support Oxygen saturation was 90%, on providing oxygen by nasal cannula at 2L/minute it improved to 98%.Electrocardiogram was done which showed low voltage on all leads. Plain chest radiograph showed minimal pleural effusion on left side and a double cardiac silhouette. Echocardiography showed pericardial effusion with features of impending tamponade, the effusion was circumferential with right ventricular distal collapse and ejection fraction of 72%.Pericardiocentesis was performed; 600mL of pericardial fluid was drained and sent for cytology, biochemistry, microbiology and tumour markers.

The patient was admitted under cardiac care unit as a case of pericardial effusion (cause under evaluation). 1.2 L of bloody pericardial fluid was drained in three sittings over the following days which lead to alleviation of breathlessness. The patient was empirically started on broad spectrum antibiotics (ceftazidime+ clavulanate). Review echocardiography was performed which revealed no pericardial effusion, no regional wall motion abnormality, A>E.

Biochemistry of the pericardial fluid revealed sugar 52mg/dl, protein 5.93 g/L, albumin 3.52g/L, LDH 630 U/L.Cytology revealed few leucocytes and numerous RBC's. Tumour markers (AFP, CA125, CA 19-9 and CEA) came out to be negative excluding neoplastic effusion. The fluid was negative for acid fast bacilli by Ziehl-Neelsen staining and Gene expert assay excluding tuberculosis.

On gram staining a few leukocytes and gram negative bacilli were revealed. The sample was inoculated under all sterile precautions onto the following media: Blood agar, MacConkey agar, Robertson's cooked meat medium. Overnight incubation revealed pure growth of

non-lactose fermenting colonies having circular ,entire edges ,1-2 mm in diameter .The organism was identified as *Burkholderia* by standard biochemical tests and results were confirmed by Vitek 2 Compact Automated ID/AST; BioMérieux, ,as *Burkholderia cepacia*.

Antibiotic susceptibility testing was performed by Kirby-Bauer method according to CLSI guidelines and confirmed by automated method where similar results unveiled the following pattern.[6] It was found to be sensitive to trimethoprim/ sulfamethoxazole, minocycline, levofloxacin. Intermediately sensitive to ceftazidime, meropenam, and resistant to ticarcillin/ clavlunic acid.

She was discharged subsequently with advice for follow up in the next week in outpatient department.

DISCUSSION

Among the non-fermenting Gram-negative bacilli (NFGNB) Bcc is a complex group comprising 20 validated species.[7] Ranking as the fourth most common pathogenic NFGNB worldwide after the most commonly isolated *Acinetobacter baumannii, Pseudomonas aeruginosa* and *Stenotrophomonas maltophilia*.

Reports of Bcc from patients have been seen in the subset who belonged to intensive care settings, patients diagnosed with sepsis, or having long hospital admission duration. Bcc in these cases was isolated from blood, CSF, respiratory samplesor pus.[8] Cases of Pericardial effusion with *Burkholderia cepacia* as causative agent have not been frequently reported.[4,5]

Among the emerging group of nosocomial pathogens Bcc is gaining importance. Timely diagnosis and targeted therapy for Bcc is of immense value owing to the fact of its high intrinsic resistance which limits the therapeutic options. It shows intrinsic resistance to ß lactams, cephalosporins, aztreonam, carbapenams, aminoglycosides, polymyxin B, colistin.[6]

In the past Hemorrhagic pericardial effusion has been attributed to trauma, tuberculosis, malignancy, iatrogenic, pericardiotomy syndrome, acute myocardial infarction, medications and aortic dissection.[9] Infectious etiologies are rare. *Chlamydia pneumoniae*, *Human rhino virus* type C infection and *Coxsackie* group B have been implicated as causative agents.[10]

Bcc frequently colonizes in irrigation solutions and intravenous fluids used in the hospital setting rarely causing infection because of its low virulence. Bcc is an important emerging group of pathogens and its survival in pharmaceutical products even in presence of antimicrobial preservatives makes it all the more a serious concern with respect to a covert source of infection.

We excluded the possibility of a nosocomial infection in our patient as the cause of her pericardial effusion because of the fact that the first Pericardiocentesis was performed within first 24 hours of her admission to the hospital.Giving an indication of the fact that Bcc can be acquired outside hospital settings.

The accession of Bcc in this case could not be attributed to a particular source. Since the lady did not belong to a particular profession so a point source could not be identified. We assume that being a homemaker the lady was exposed to some over the counter pharmaceutical product such as nasal spray, ointment, mouthwash etc. Belonging to Kashmir the traditional practice of helping with the orchard or vegetable garden may have exposed her to some agricultural product which could have *Burkholderia spp.* as promoter of plant growth. We postulated that the organism may have gained entry through mediastinal lymph nodes in the course of respiratory tract infection that the patient harbored before presenting to the hospital though any structural lung disease was excluded in her case.

Therefore clinical skepticism regarding the etiology of hemorrhagic pericardial effusion should be broadened though only few reports of Bcc have been seen in patients without underlying structural lung disease. Moreover such rare and isolated cases vindicate for clinical studies regarding risk factors and pathogenicity of this group of organisms.

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