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A RARE CASE OF *PSEUDOMONAS AERUGINOSA*? RIGHT-SIDED VALVULAR ENDOCARDITIS IN A CONGENITAL VSD PATIENT A CASE REPORT

Microbiology

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ABSTRACT

A 14 year old girl with congenital ventricular septal defect was admitted for high grade fever since 1 month associated with dyspnea and vomiting for 5 days. Relevant investigations were done. OBJECTIVES: To determine the causative agent, antibiotic sensitivity pattern and its outcome in a case of Infective endocarditis.

METHODS: Blood cultures, Direct Gram's staining Bacteriological culture and antibiotic susceptibility testing.

RESULTS: Direct Gram stain of broth showed Gram negative, Gram negative bacteria bacilli with Non lactose fermenting colonies on mac-conkey agar, being sensitive to Aminoglcosides, beta-lactam antibiotics, third generation cephalosporins and carbapenems.

DISCUSSION: Although *Pseudomonas aeruginosa* associated endocarditis is more seen in I.V abusers, a rare case of native Right-sided valvular endocarditis was reported Pseudomonas endocarditis is associated with high mortality and mostly requires medical therapy as well surgical repair Due to emergence of resistant Pseudomonas strains, a Combined Drug therapy should be considered.

CONCLUSION: Encouraging results were observed after successful treatment with combination of Piptaz and Amikacin.

KEYWORDS

INTRODUCTION

An increasing number of healthcare-associated Infective endocarditis (HCA-IE) are consistently being reported (1)Further, a clinically important new type of IE, Non-Nosocomial Healthcare-associated IE (NNHCA-IE), which is defined as "IE cases originating from outpatients who underwent medical cares in community settings", has been identified in recent years.(2)

Pseudomonas aeruginosa is typically associated with nosocomial infections.The organism is historically known to cause community-acquired IE which develops primarily in the right side of the heart of patients with a history of intravenous drug (IVD) abuse(3,4).With increase in invasive medical interventions, cases of *P. aeruginosa*-induced HCA-IE have also recently increased.(5) Herein, we report a case of Right-sided NNHCA-IE caused by *P. aeruginosa*, along with a review of the recent literature.

CASE PRESENTATION

A 14-year-old female with a history of congenital ventricular septal defect was admitted to our hospital with chief complaints of Fever - 1 month, Dyspnea - 8 days, Vomiting - 5 days, Mild Arthralgia, and headache - for 1 week.

History of Present illness: Patient was in usual state of health 1 month ago when she initially developed fever It was initially high grade then low grade, intermittent fever in association with mild cough and small scanty sputum, shortness of breath, palpitation and joint pains not associated with rash It was not associated with ear, nasal and urethral discharge. Fever was temporarily relived by antipyretics on outpatient basis in nearby clinic for time being. After 1 month, patient experienced pain in right hypochondrium associated with dyspnoea and vomiting's of 4-5 episodes per day. After viewing past history of congenital heart disease, patient was admitted in ICCU.

PATIENT HISTORY:Patient was a known case of "Acyanotic Congenital Heart Disease"(VSD) since the age of 4 years Patient was on & off on treatment.No prescription papers available

RESULTS

A young moderately built girl, well-nourished lying comfortably flat on bed, well oriented in time and space having i/v cannula in her Right.arm. No History of drug allergy recorded yet. Immunization as per schedule given.

Vitals
Temp: 102F
Pulse: 96/min.
Bp: 110/70 mmHg
R/R: 21/min
Pallor: -ve
Cynosis: -ve
Clubbing: -ve
Splinter:-ve
Janway lesions: -ve
Oslar nodes:-ve
Jaundice:-ve
Jvp: not raised
Edema:-ve
Thyroid: not enlarged

CVS EXAMINATION

Pulse :
96/min.
Regularly regular
Normal volume
No radio- radial and radio- femoral delay
All the pulses palpable
Auscultation:
S1 and S2 soft at their respective areas.
S2 is variable split
Ejection systolic murmur:-positive at left lower sternal border of grade 3/6 radiating across sternum
No carotid bruit.
Diastolic thrill at A1 area +ve

BLOOD CULTURE :

Blood culture samples obtained for culture were processed as per standard microbiological procedures Direct Gram stain of all three broth showed presence of Slender Gram-negative bacilli Culture of all three samples showed the presence of:1)Blood Agar:- Blue green pigmented(Pyocyanin) producing Non-hemolytic motile bacteria.2)Mac-Conkey Agar:-Non-Lactose Fermenting, oxidase and catalase positive bacteria developed.

Fig.1 Blood Agar:- Blue green pigmented(Pyocyanin) producing Non-hemolytic motile bacteria

Biochemical reactions: Indole:-negative, MR:- negative, VP:-negative, Citrate:-Positive, Urease-negative, TSI:-K/K, Based on the above observations, the isolate was identified as Pseudomonas aeruginosa as per standard microbiological procedures. Antibiotic sensitivity pattern(by Kirby-Bauer Disc-Diffusion method):-Sensitive to Amikacin, Piperacillin + Tazobactam, Ceftazidime, Imipenem.

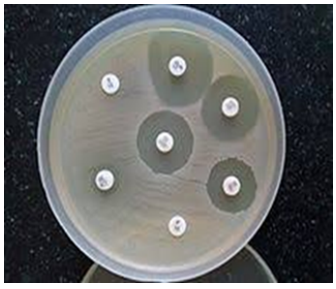

Fig.2 Antibiotic sensitivity pattern(by Kirby Bauer Disc-Diffusion method)

DISCUSSION:

P. aeruginosa endocarditis is a clinically rare condition. In an international study including 61 hospitals in 28 countries, the pathogen accounted for only 0.4 % (11/2761 cases) of all cases of IE(6)For outpatients, we generally do not suspect *P. aeruginosa* as a potential pathogen for IE, and thus, anti-pseudomonal agents are not empirically prescribed.

We stress the importance of identifying the causative pathogen(s) in every cases of IE, especially in cases with a recent history of medical intervention.The primary pathogen entry is undetermined in most of the cases. Our patient repeatedly got treated on out-patient basis in nearby hospital. Thus, we suspect this extensive out-of-hospital contact with healthcare interventions could be the possible pathogen entry site in the presented case

Although the effectiveness of antimicrobial combination therapy remains controversial, it may be preferable when the potential emergence of drug resistant strains during treatment is considered,(7) as seen in our case. Thus, we consider that anti-pseudomonal beta-lactams or carbapenems combined with aminoglycosides can be a choice for cases of *P. aeruginosa* endocarditis.

The need for surgical intervention in the treatment for *P. aeruginosa* endocarditis should be carefully considered, as recent literature reports that the disease can be successfully treated medically(8,9)

TREATMENT:

Based on the antibiotic susceptibility pattern, Patient was put on combination drug therapy of Piperacillin+Tazobactam and Amikacin(Aminoglycosides) The patient's symptoms resolved with antibiotic treatment and fever subsided.

CONCLUSIONS:

In this present case study, we put forth a rare of Right-sided valvular NNHCA-IE caused by *P. aeruginosa*.Predisposing Congenital Heart Disease and extensive out-of-hospital contact with healthcare interventions were suspected as the cause of the infection.

Optimal treatment is undetermined, but combination therapy with anti-pseudomonal beta-lactams or carbapenems and aminoglycosides would be preferable. Surgical intervention for the disease should be carefully determined in every case.

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