ORIGINAL RESEARCH PAPER

Volume-8 | Issue-2 | February-2019 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

STUDY OF EPIDEMIOLOGICAL FACTORS, CLINICAL SPECTRUM AND ANTIBIOTIC SUSCEPTIBILITY OF MELLIODOSIS IN GOA MEDICAL COLLEGE

General Medicine

Dr. Sreenidhi HC Junior Resident, Department Of General Medicine, Goa Medical College

Dr. Vinay Kumar A V* Junior Resident, Department Of General Medicine, Goa Medical College, Goa
*Corresponding Author

Dr. Marina Vaz Lecturer, Department Of General Medicine, Goa Medical College, Goa

ABSTRACT

This is a Case series study on epidemiological factors, clinical spectrum and drug susceptibility of 10 microbiologically culture proven cases of melioidosis in goa medical college over a duration of 8 months. Diagnosis of Burkholderia is done by culture of blood or specific body fluids (joint fluid aspirate, pus aspirate) on Ashdown's medium.(1) Burkholderia is most commonly seen in middle and elderly population. Males are predominantly affected. Commonly seen in diabetic host. Most common occupation was field workers. Most commonly presenting as sepsis with acute kidney injury. Rare presentation includes skin abscesses, brain abscesses, splenic micro abscesses and brain abscesses. Most commonly sensitive to monobactams. Ceftazidime resistant strains are emerging as new clinical challenge.(2)

KEYWORDS

Burkholderia pseudomallei, ceftazidime, antibiotic resistance, melioidosis

INTRODUCTION

Melioidosis is a bacterial infection caused by Burkholderia pseudomallei. It has diverse clinical spectrum including asymptomatic infection, chronic pneumonia, leg ulcers, septic arthritis, liver abscess, splenic abscess, brain abscess, septicemic shock etc. Disease was first described by Krishna swami and Whitmore in 1912 disease is most common in south east Asian countries including India. Many cases have been reported from India, more from Karnataka and Tamilnadu states.(2) Increase in the number of cases of diabetes mellitus, chronic kidney disease and other immunocompromised states has caused increase in reports of melioidosis. It also mimics tuberculosis, and there are reports of patients being treated initially for tuberculosis until a definitive diagnosis was made.

B. pseudomallei is a small, gram-negative, oxidase-positive, motile, aerobic bacillus with occasional polar flagella. On gram staining, a bipolar "safety pin" appearance is seen. Organism is present in soil and surface water in endemic regions. Humans are infected by percutaneous inoculation, inhalation, aspiration, or ingestion' Immunosuppressed elderly persons (e.g., those suffering from diabetes mellitus and/or alcoholism) are at increased risk of developing infection.(3) Activation of toll-like receptor-5 (TLR-5) by lipopolysaccharide (LPS) results in the rapid recruitment of innate immune cells, such as neutrophils, macrophages, and natural killer cell. Incubation period varies from few days to many months.

Pneumonia is the commonest clinical manifestation in patients with melioidosis. Pneumonia can be acute fulminant or chronic resembling tuberculosis. (a) Multiple abscesses in lungs and many internal organs. (b) Skin abscess or ulceration, soft tissue abscess. (c) Joint pain, septic arthritis. (d) Bacteremic phase with sepsis, septic shock.(5)Enceph alomyelitis, brain abscess

Definitive diagnosis of melioidosis requires a positive culture of B. pseudomallei. Blood, urine, synovial fluid, throat swab, skin swab can be used for culture'. B. pseudomallei readily grows in commercially available blood culture media but most often misidentified as a Pseudomonas or other Burkholderia species. Ashdown's medium, a gentamicin-containing medium can be used for selective growth of B. pseudomallei. B. pseudomallei can be identified by combining the commercial API 20NE or 20E biochemical kit with a simple screening system involving the Gram stain, oxidase reaction, typical growth characteristics, and resistance to antibiotics like polymyxin B and aminoglycosides.(1)

B.pseudomallei shows inherent resistance to many antibiotics in clinical use and exhibit tendency to cause relapse despite successful initial and maintenance therapy. It has the potential of being a biological weapon and causes infections with serious consequences among individuals with immunosuppression, alcoholism, diabetes and chronic renal failure.

Treatment is **Intensive Therapy -Minimum of 10-14 days** Ceftazidime (50 mg/kg, up to 2 g) q6 or Meropenem (25 mg/kg, up to 1 g) q8h Or Imipenem (25 mg/kg, up to 1 g) q6h. Any one of the three may be combined with trimethoprim-sulfamethoxazole (6/30 mg/kg, up to 320/1600 mg) q12h (recommended for neurologic, cutaneous, bone, joint, and prostatic melioidosis). **Eradication Therapy - Minimum of 3 Months** trimethoprim-sulfamethoxazole (6/30 mg/kg, up to 320/1600 mg) q12h.

Melioidosis is not an uncommon cause of fatal community acquired pneumonia. The widespread presence of Burkholderia has resulted in sporadic cases and outbreaks in a variety of geographic areas throughout world. It is therefore important to periodically assess the antibiotic susceptibility patterns of B. pseudomallei to guide initial empiric therapy. We report here the clinical presentation and antibiotic susceptibility data of B. pseudomallei isolates from patients with melioidosis treated in goa medical college over the last 8 months.

MATERIALS AND METHODS

This is retrospective analysis of 10 cases of melioidosis admitted in goa medical college and hospital from January 2018 to September 2018. Patients with culture proven melioidosis were traced. Ashdown's medium was used as selective medium for Burkholderia pseudomallei. Antibiotic susceptibility was done by either disk diffusion method or BACTEC using automated biomerieux vitek2. Clinical specimens i.e. blood, CSF, pus, bone marrow and knee joint aspirate from suspected sites of infection were sent for Microbiology laboratory for culture and antibiotic sensitivity testing.

RESULTS

Among 10 patients 8(80%) were males and 2(20%) were females. 4(40%) patients were in age group of less than 40 years and remaining 6(60%) were more than 40 years. Most of the patients were from border places of goa and Maharashtra. Among 10 patients 6(60%) were diabetic, 2(20%) were alcoholic and 1(10%) patient was alcoholic and diabetic. Fever of more than 2 weeks was most common presenting symptom present in all patients (100%). Pulmonary involvement was present in 5(50%) patients, 4(40%) had bilateral pneumonia and 1(10%) had pleural effusion. 3(30%) patients had skin ulcers. 2(20%) patients had septic arthritis, splenic micro abscesses, portal peri splenitis and portal vein thrombosis. 1(10%) patient had brain abscess. 3(30%) patients presented with sepsis and AKI.

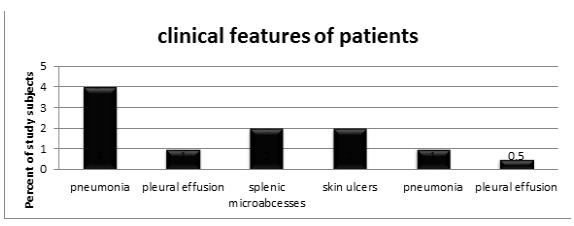

Figure 1 – clinical presentation

Antibiotic susceptibility of patients:
Among 10 patients, synovial aspirate of 1 patient with septic arthritis, broncho alveolaar lavage of 1 patient with pneumonia, pus aspirate of 1 patient with skin abcess and 7 patients had blood culture positive for B. pseudomallei.

Among isolates, 8(80%) isolates showed sensitivity to ceftazidime, 3(30%) isolates showed sensitivity to levofloxacin, 7(70%) isolates showed sensitivity to imipenem and all 10(100%) isolates showed senstivitity to cotrimoxazole, minocycline and meropenem. 2(20%) isolates showed resistance to ceftazidime.

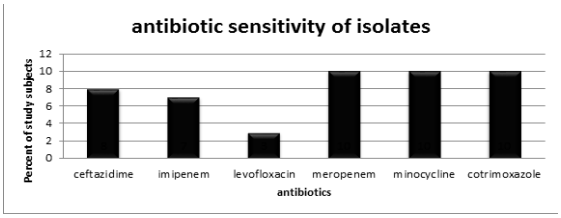

Figure 2- antibiotic sensitivity of the isolates

CONCLUSION

Melioidosis is emerging as an important bacterial infection and public health problem with diverse clinical presentation varying from asymptomatic phase to fatal septicaemia with long incubation period. emergence of ceftazidime resistant strains is an important alarming sign for treating clinicians and microbiologists. Early clinical suspicion, appropriate sample culture and awareness among health care providers is needed for effective control of infection.

REFERENCES

1. Samy RP, Stiles BG, Sethi G, Lim LHK. Melioidosis: Clinical impact and public health threat in the tropics. 2017;1–28.
2. Mukhopadhyay C, Shaw T, Varghese GM, Dance DAB. Melioidosis in South Asia (India , Nepal , Pakistan ,.
3. Limmathurotsakul D, Golding N, Dance DAB, Messina JP, Pigott DM, Moyes CL, et al. Predicted global distribution of Burkholderia pseudomallei and burden of melioidosis. 2016;(January):6–10.
4. Corea E, Thevanesam V, Perera S, Jayasinghe I, Ekanayake A, Masakorala J, et al. Melioidosis in Sri Lanka : an emerging infection. 2012;1(2):2–8.
5. Sarovich DS, Price EP, Limmathurotsakul D, Cook JM, von Schulze AT, Wolken SR, et al. Development of ceftazidime resistance in an acute burkholderia pseudomallei infection. Infect Drug Resist. 2012;5(1):129–32.
6. Jenney AWJ, Lum G, Fisher DA, Currie BJ. Antibiotic susceptibility of Burkholderia pseudomallei from tropical northern Australia and implications for therapy of melioidosis. 2001;17:109–13.\
7. Princess I, Ebenezer R, Ramakrishnan N, Daniel AK, Nandini S, Thirunarayan MA. Melioidosis : An Emerging Infection with Fatal Outcomes. 2017;(63):397–400.
8. Behera B, Babu TP, Kamalesh A, Reddy G. Ceftazidime resistance in Burkholderia pseudomallei : First report from India. 2012;329–30.
9. Mc SB, Saritha N, Jyothi R. Melioidosis : An emerging infection in India. 2017;4(December 2014):190–3.
10. Dance D. International Journal of Antimicrobial Agents Treatment and prophylaxis of melioidosis. Int J Antimicrob Agents [Internet]. 2014;43(4):310–8. Available from: http://dx.doi.org/10.1016/j.ijantimicag.2014.01.005
11. Hassan MRA, Vijayalakshmi N, Pani sp. antimicrobial susceptibility patterns of burkholderia pseudomallei among melioidosis cases in kedah , malaysia. 2014;45(3).