International Journal of Microbiology Research
ISSN: 0975-5276 & E-ISSN: 0975-9174, Volume 11, Issue 6, 2019, pp.-1606-1607.
Available online at https://www.bioinfopublication.org/jouarchive.php?opt=&jouid=BPJ0000234

Case Report

PRIMARY PULMONARY MELIOIDOSIS WITH SECONDARY SEPTICAEMIA

KENNEDY KUMAR P.*, PREMAMALINI T., SRIDHARAN K.S., DHANASEKAR T. AND ALMAS FATHIMA U.
Department of Microbiology, Sri Ramachandra Medical College & Research Institute, Sri Ramachandra Institute of Higher Education, Porur, Chennai, 600116, India
*Corresponding Author: Email - drtpremamalini@gmail.com

Received: June 02, 2019; Revised: June 24, 2019; Accepted: June 26, 2019; Published: June 30, 2019

Abstract- Melioidosis is an emerging infection with increased mortality due to multi-organ involvement. We here with presenting a case of primary pulmonary Melioidosis with secondary septicaemia in a male patient 34year old patient. The patient was successfully treated with ceftazidime on timely and correct identification of the causative organism *Burkholderia pseudomalei*. Gram negative bacilli showing Polymyxin B resistance should give a clue for suspecting *Burkholderia pseudomalei*.

Keywords- *Pulmonary Melioidosis, Burkholderia pseudomalei, Polymyxin B, Latency & COPD*

Citation: Kennedy Kumar P., *et al*., (2019) Primary Pulmonary Melioidosis with Secondary Septicaemia. International Journal of Microbiology Research, ISSN: 0975-5276 & E-ISSN: 0975-9174, Volume 11, Issue 6, pp.-1606-1607.

Introduction

Melioidosis is an uncommon infectious disease caused by the gram-negative saprophyte *Burkholderia pseudomallei*. It is prevalent in few areas of the world like Southeast Asian countries and tropical Australia [1]. This is an emerging infection in India which is alarming [2]. Pneumonia is the most common presentation of melioidosis. Acute, subacute and chronic pneumonia due to *B. pseudomallei* can present as primary or secondary pneumonia. Melioidosis pneumonia can present as an acute illness, fulminant sepsis with multifocal lung infiltrates or chronic infection that mimics tuberculosis both clinically and radiologically [3]. Melioidosis pneumonia can be the primary presenting illness, or can be secondary to an initial illness at a distant site, or can develop in patients with bacteremia without an initial apparent focus [4]. *B. pseudomallei* may remain latent for many years and then reactivate; however, most melioidosis cases are thought to occur soon after exposure [5]. This case report highlights the successful treatment outcome in a male with Chronic Obstructive Pulmonary Disease suffering from primary melioidosis pneumonia and septicaemia.

Case report

A 34 year old male patient presented to the pulmonology Out Patient Department with complaints of cough with expectoration and fever for 5 days. The cough was productive with brown, purulent sputum production. The fever was high grade and intermittent. He had loss of weight and malaise for the past one month. He gave a past history of obstructive airway disease and atopy since 7 years. He was a smoker with 15 pack years history. On examination he was febrile, heart rate 125/min and blood pressure 100/60 mmHg. On auscultation chest had few crepitations bilaterally. Laboratory values were Haemoglobin-11.6; Total count-24,100; Random blood sugar-144, Chest radiography showed small bilateral nodules; Blood and urine culture showed no growth of bacteria or fungi, Sputum smear examination showed > 25 pus cells/10x, <10 epithelial cells /10x, moderate gram negative bacilli with few intracellular forms & few gram positive cocci in pairs. Sputum culture had growth of *Burkholderia pseudomallei* which was sensitive to ceftazidime, tetracycline, imipenem, co-trimoxazole on day 2 of hospitalisation. Two days later blood culture was sent again which showed growth of *Burkholderia pseudomallei* with the same sensitivity pattern. The patient was started on ceftazidime 2 g intravenous 8th hourly for 3 weeks followed by maintenance therapy with capsule doxycycline (100 mg twice daily) and tablet co-trimoxazole (160 + 800 mg, twice daily) for 6 months. He was also advised to quit smoking. The patient responded well to the treatment. His fever subsided and cough became unproductive after three days. The total count done on day 6 of hospitalisation was 13,300.

Fig-1 Growth of Burkholderia in blood agar

Fig-2 Dry wrinkled colonies of Burkholderia in MacConkey agar

Discussion

Melioidosis which is a serious and life threatening infection, though prevalent in our country is commonly under- reported due to lack of awareness among the clinicians and microbiologists about the potential role of this organism in causing human infections. The causative agent, *Burkholderia pseudomallei* is a non-fastidious organism which can grow on a wide range of ordinary culture media, producing wrinkled colonies with metallic appearance. The colony morphology of *B. pseudomallei* which grew in sputum and blood culture of the patient is shown in [Fig-1] & [Fig-2]. Though the identity of this bacterium is always confused with Pseudomonas species, its unique antibiotic susceptibility pattern provides clue to its identification. *B. pseudomallei* is usually intrinsically resistant to all aminoglycosides and polymyxin B, but sensitive to amoxiclav. This organism has good sensitivity to carbapenems and ceftazidime. Our test isolate also exhibited this typical antibiotic susceptibility pattern [11, 12] and the culture isolate was identified promptly. Since the mortality rate is high for patients who receive inappropriate antibiotics or delayed appropriate antibiotics, attempt should be made to speciate all oxidase positive non-fermenting bacilli with unusual susceptibility pattern [13]. More than half of the cases of melioidosis present as pneumonia, among which acute/subacute primary pneumonia accounts for the majority of the cases [2]. Our patient presented with fever and cough with expectoration, and his chest radiography showed bilateral nodular opacities in both lungs. Patients having melioidosis pneumonia with septicaemia can present severely ill or at times with clinical features insufficient to suggest a focus of infection but with chest radiography findings consistent with bacteraemia pneumonia, typically multiple nodular opacities or multiple patches of alveolar infiltration [6, 7, 8]. These cases may progress rapidly with coalescence of the lesions, formation of new lesions, and cavitation [14].Clinical progression of acute melioidosis pneumonia is often rapid, and septic shock & death are common outcomes without timely and appropriate treatment [7-10]. Also the causative agent of melioidosis, *B. pseudomallei* strains vary in their individual ability to cause disease. The clinical outcome also clearly depends on the immune status of the individual and response of the infected host to the disease [2]. In our case, the patient was a known smoker and gave past history of COPD since 7 years. About 80% of the patients with melioidosis are usually associated with anyone of the risk factors like diabetes mellitus, heavy alcohol use, chronic pulmonary disease, chronic renal disease, thalassemia, glucocorticoid therapy and cancer [7]. COPD and smoking may predispose to pulmonary infection via local immune dysfunction. In this case the patient had *B. pseudomallei* grown in blood culture. The mortality rate of this infection remains high in cases of acute septicemic melioidosis with multiorgan failure, especially if blood culture continues to be positive after the first week of hospitalization with use of appropriate antibiotics [15].Therefore, a prolonged follow-up, with repeated blood cultures, appears to be essential in the management of melioidosis.

Conclusion

Melioidosis is a serious and sometimes life threatening infection which seems to be prevalent in our country and is often not diagnosed due to lack of awareness among the clinicians and microbiologists. Hence melioidosis should be considered as one of the differential diagnosis in patients presenting with pneumonia or sepsis; culture morphology showing dry wrinkled colonies and characteristic antibiotic sensitivity pattern exhibiting resistance to polymyxin B. Precise identification of *B. pseudomallei* is necessary for providing the patient with prompt and effective treatment, which in turn may prevent the development of sepsis and disseminated infection, thereby reducing the mortality rate of this infection.

Application of research: Study of primary pulmonary melioidosis with secondary septicaemia

Research Category: Medical microbiology

Acknowledgement / Funding: Authors are thankful to Sri Ramachandra Medical College & Research Institute, Sri Ramachandra Institute of Higher Education, Porur, Chennai, 600116, India.

***Research Guide or Chairperson of research: Dr P Kennedy Kumar**
University: Sri Ramachandra Institute of Higher Education, Chennai, 600116
Research project name or number: Clinical case report

Author Contributions: All authors equally contributed
Author statement: All authors read, reviewed, agreed and approved the final manuscript. Note-All authors agreed that- Written informed consent was obtained from all participants prior to publish / enrolment

Study area / Sample Collection: Department of Microbiology, Sri Ramachandra Medical College & Research Institute, Porur, Chennai, 600116, India

Conflict of Interest: None declared

Ethical approval: Ethical approval taken from Sri Ramachandra Medical College & Research Institute, Sri Ramachandra Institute of Higher Education, Porur, Chennai, 600116, India.
Ethical Committee Approval Number: Nil

References

[1] Cheng A.C., Currie B.J. (2005) *Clin Microbiol Rev*., 18(2), 383–416.
[2] Adler N.R.L., Govan B., Cullinan M., Harper M., Adler B., Boyce J D. (2009) *FEMS Microbiol Review*, 33,1079–1099.
[3] White N.J. (2003) *Lancet*, 361,1715–1722.
[4] Currie B.J., Fisher D.A., Howard D.M., Burrow J.N., Lo D., et al. (2000) *Clin Infect Dis*., 31,981–986.
[5] Currie B.J., Fisher D.A., Anstey N.M., Jacups S.P. (2000) *Trans R Soc Trop Med Hyg*., 94,301–304.
[6] Chaowagul W., White N.J., Dance D.A., Wattanagoon Y., Naigowit P., et al. (1989) *J Infect Dis*., 159,890-9.
[7] Flemma R.J., DiVincenti F.C., Dotin L.N., Pruitt B.A. Jr. (1969) *Ann Thorac Surg*., 7, 491-9.
[8] Bateson E.M., Webling D.D. (1981) Australas Radiol., 25, 239-45.
[9] Reechaipichitkul W. (2004) *Southeast Asian J Trop Med Pub Health*, 35, 664-9.
[10] Mukhopadhyay A., Lee K.H., Tambyah P.A. (2004) *J Infect*., 48, 334-8.
[11] Moore R.A., DeShazer D., Reckseidler S., Weissman A., Woods D. E. (1999) *Antimicrob Agents and Chemother*, 43,465–70.
[12] Wuthiekanun V., Peacock S.J. (2006) *Expert Rev. Anti Infect Ther*., 4,445–55.
[13] Chaowagul W., Simpson A.J., Suputtamongkol Y., White N.J. (1999) *Clin Infect Dis*., 28,1328.
[14] Dhiensiri T., Puapairoj S., Susaengrat W. (1988) *Radiology*,166,711–15
[15] Currie B.J., Fisher D.A., Howard D.M., Burrow J.N. (2000) *Acta Trop*., 74(2-3),145-51.