

Lysinibacillus Bacteriemia in an Adult Cancer patient

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Abstract

Lysinibacillus is a genus of rod-shaped gram-positive bacteria most often found in soil and plantlife, however, it has been isolated from air and from the human intestinal microbiome as well. The genus *Lysinibacillus* is most often disregarded when isolated in the laboratory; nevertheless, it usually acts as an opportunist in immunocompromise hosts with various mortality rates. Here we present a case of bacteriemia due to *Lysinibacillus* in a patient whose clinical history and risk factors suggested otherwise. It is crucial to pay attention to the identification of this types of organisms, particularly, when they come from techniques such as spectroscopy. This in order to have a broader picture when addressing this type of patients.

Key Words: *Lysinibacillus*, Bacteremia, Cancer, Adult

Bacteremia por *Lysinibacillus* en paciente adulto con cáncer

Resumen

Lysinibacillus es un género de bacterias grampositivas en forma de bastón que se encuentran con mayor frecuencia en el suelo y en la vida vegetal; sin embargo, se ha aislado también del aire y en microbiota intestinal del ser humano. Al aislamiento del género *Lysinibacillus* no se le da importancia en general cuando se aísla en el laboratorio; sin embargo, suele actuar como un oportunista en huéspedes inmunocomprometidos con diversas tasas de mortalidad. A continuación presentamos un caso de bacteriemia por *Lysinibacillus* en un paciente cuya historia clínica y riesgo factores sugieren lo contrario. Es fundamental prestar atención a la identificación de este tipo de organismos, en particular, cuando provienen de técnicas como espectroscopia. Esto con el fin de tener un panorama más amplio al momento de abordar este tipo de pacientes.

Palabras clave:

Introduction

Lysinibacillus is a genus of rod-shaped gram-positive bacteria most often found in soil and plantlife, however, it has been isolated from air and from the human intestinal microbiome as well¹⁻³. *Lysinibacillus spp* are very seldom associated with clinical disease. However, there have been few reports of sepsis or other clinical conditions due to such organisms in humans^{1,4,5}. Among relatively newly used microbiological identification techniques, mass spectroscopy plays an important role nowadays^{6,7}. It has the ability of rapidly identifying nearly 98% of clinically relevant bacteria, mycobacteria, and

fungi with very well receiver operative characteristics⁷. We report a case of bacteriemia due to *Lysinibacillus* in a patient whose clinical history and risk factors suggested otherwise. This report shows the importance of not disregarding this type of organisms and the relevance of identification techniques such as mass spectrophotometry.

Case presentation

A 54-year-old woman with a history of metastatic Papillary thyroid carcinoma frequent user of subcutaneous thoracic catheters with no recent chemotherapy presented to the

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Emergency Room of the Hospital Universitario San Ignacio at Bogota Colombia (HUSI) complaining of 2 days of fever, malaise, nausea, emesis, and purulent discharge from the subcutaneous catheter. Prior to admission the patient received 6 days of oral cephalexin and the indication of removing the catheter being done one day prior to admission. The physical examination revealed the patient was febrile, tachycardic with an altered mental status and presented erythema at the catheter implantation site with no purulent discharge. Laboratory results on admission showed a white blood cell count of 14,900 cells/mL with 95.1% neutrophils, potassium of 2.9 mmol/l with no other alterations of blood chemistry or blood panel. A chest soft tissue ultrasound was performed with no evidence of abscesses or collections. At that moment, a high probability of a device associated infection with prior use of broad-spectrum antibiotics was initially treated with 3 days of intravenous vancomycin, however, due to the persistence of fever, mental status deterioration and the preliminary report of the peripheral blood cultures with gram stain positive for gram negative bacilli, the initial antibiotic regimen was switched to cefepime. Patient then started to improve clinically very quickly with a final report from two bottles of *Lysinibacillus spp* by MALDITOF. The patient completed 14 days of cefepime and was discharged to continue as an oncology outpatient.

Discussion

The genus *Lysinibacillus* is most often disregarded when isolated in the laboratory; nevertheless, it may be highly virulent in humans^{5,8}. Mortality rates reported range from 5 to 40%, however, this data is not from population-based analyses and include all Bacilli genus^{5,8}. *Lysinibacillus* infection is often related with the presence of intravenous catheters and has been described principally in children with cancer⁸. Bacillus species are usually susceptible to Clindamycin, fluroquinolones, and Vancomycin, however, in the few cases described vancomycin resistance has been identified and cephalosporin susceptibility has been variable^{5,8,9}. To our knowledge there have been only three reported cases of *Lysinibacillus* blood stream infections in adults^{1,4,5}. Our report shows a bacteremia in a cancer patient who has been using subcutaneous catheter; hence, making the clinicians at admission suspect gram-positive cocci as the most likely etiology. The initial antibiotic treatment with vancomycin, a theoretically susceptible antibiotic for other gram-positive bacilli was used. As it was described, in spite of initial treatment the patient did

not improve which results unusual, however vancomycin resistance is a possibility for this type of organisms⁹. We unfortunately did not have a susceptibility profile for the isolated bacteria, nonetheless, rational evidence for the identification was held by MALDITOF. We therefore believe it is crucial to pay attention to the identification of this types of organisms, particularly, when they come from techniques such as spectroscopy. This in order to have a broader picture when addressing this type of patients.

Ethics

Informed consent for publishing was obtained from the patient and the case was approved by the Ethics Committee of Hospital Universitario San Ignacio FM-CIE-0579-19.

Conflict of interest. None of the authors declare any conflict of interest whatsoever.

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