



Meningitis due to *Leuconostoc Mesenteroides* Associated with Central Nervous System Tuberculosis: A Case Report

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Abstract

Bacteria in the genus *Leuconostoc* are very infrequent opportunistic pathogens. We report a case of meningitis due to *Leuconostoc mesenteroides* sub sp. *mesenteroides* associated with central nervous system tuberculosis in a patient with advanced HIV/AIDS infection.

Keywords: *Leuconostoc mesenteroides*; HIV; Tuberculosis; Meningitis

Case Presentation

47-year-old male patient with a history of HIV/AIDS infection with poor adherence to Highly-Active Antiretroviral Therapy (HAART) and a CD4 count of 86 cells/mm³ is brought to the emergency department by his relatives because of disturbance of general behavior and disorientation. At the time of evaluation he was febrile, bradypsychic and inattentive, with no motor or sensory deficit objectifiable and with signs of frontal disinhibition.

Routine laboratory tests were performed, with mild hyponatremia as the only pathological finding; a brain CT scan was informed as normal and serum *Cryptococcus neoformans* antigen assay was negative. A lumbar puncture was performed with normal opening pressure; and a clear cerebrospinal fluid (CSF) with lymphocytic pleocytosis, hyperproteinorraquia and low glucose level was obtained. A Polymerase Chain Reaction to detect *Mycobacterium tuberculosis* in CSF was performed (GeneXpert MTB / RIF[®]), with a positive result for rifampicin-sensitive *Mycobacterium tuberculosis*; and CSF culture was positive for *Leuconostoc mesenteroides* subsp. *mesenteroides* sensitive to ampicillin, gentamicin and minocycline. Meningitis due to *Leuconostoc mesenteroides* subsp. *Mesenteroides* associated with central nervous system tuberculosis was diagnosed, and treatment with antituberculous drugs, glucocorticoids and ampicillin was promptly started. The patient evolved unfavorably and died on the seventh day of hospitalization due to healthcare-associated pneumonia.

Discussion

Leuconostoc is a genus of lactic-acid producing bacteria. Its members are usually found on the environment in pickled vegetables, dairy and viticulture products.

Bacteria from the *Leuconostoc* genus are non-sporulated gram positive cocci, facultative anaerobes, grouped into pairs or chains and are intrinsically resistant to vancomycin [1]. They are usually considered opportunistic pathogens to the human host, affecting more frequently pediatric population [2]. The use of central venous catheters and parenteral nutrition [3], as well as a history of bacteriemic infections [4] and previous exposure to vancomycin [5] are risk factors present in most cases of infections due to pathogens from *Leuconostoc* genus described in the literature. Disruptions in gastrointestinal barrier such as observed in amyloidosis, short bowel syndrome or advanced HIV/AIDS infection may play a role in the translocation of *Leuconostoc* from the colonized gastrointestinal tract as well [6].

In central nervous system infections, *Leuconostoc mesenteroides* has been documented as a pathogen causing meningitis in adults [7,8] and neonates [9], as well as post-neurosurgical ventriculitis [10].

Although association between *Leuconostoc* and tuberculosis has been described in a patient with

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Received Date: 16 Dec 2016

Accepted Date: 04 Jan 2017

Published Date: 06 Jan 2017

Citation:

Barletta J, Estrada T, Rolón MJ, Erbin M, Kaufman S, Pérez H. Meningitis due to *Leuconostoc Mesenteroides* Associated with Central Nervous System Tuberculosis: A Case Report. *Ann Clin Case Rep.* 2017; 2: 1228.

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Table 1: *L. mesenteroides* subsp. *mesenteroides*: Microbiological Features.

<i>L. mesenteroides</i> subsp. <i>mesenteroides</i> : microbiological features.	
•	Gram-positive chain-grouped cocci
•	Resistant to vancomycin
•	α-hemolytic
•	Catalasenegative
•	PyrrolidonylArylamidase (PYR)negative
•	Leucineaminopeptidase (LAP) negative
•	Bile-esculin positive

rheumatoid arthritis [6], it seems to be more related to the underlying immunosuppressive condition than to a causal pathophysiological relationship between *Leuconostoc* and *Mycobacterium tuberculosis*.

In individuals with HIV/AIDS, microorganisms from *Leuconostoc* genus were isolated in samples from patients with Lung [11] and endovascular [12] infections, in most cases as a germ associated with other pathogens (*S. epidermidis*, *H. influenzae*, and *S. pneumoniae* among others) [12] and with high-mortality.

Conclusion

Leuconostoc mesenteroides subsp. *mesenteroides* is an uncommon pathogen that is usually associated with other germs and produces infections with high mortality. Its microbiological features are listed in (Table 1). It should be taken into account as an etiological agent causing severe infections due to vancomycin-resistant gram-positive cocci in patients with risk factors for invasive infections, even in those without prior antibiotic exposure.

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