International Journal of Medical and Health Research
ISSN: 2454-9142; Impact Factor: RJIF 5.54
Received: 17-05-2019; Accepted: 20-06-2019
www.medicalsciencejournal.com
Volume 5; Issue 8; August 2019; Page No. 151-152

Linezolid induced lactic acidosis

Dr. Saumya Gupta[1*], Dr. Sanjay[2], Dr. Adhar Harshana[3], Dr. Eram Nahid[4]
[1] Assistant Professor, Department of Medicine, Institute of Medical Sciences, BHU, Varanasi, Uttar Pradesh, India
[2, 3] Junior Resident, Department of Medicine, Institute of Medical Sciences, BHU, Varanasi, Uttar Pradesh, India
[4] Junior Resident, Institute of Medical Sciences, BHU, Varanasi, Uttar Pradesh, India

Abstract
Linezolid is an oxazolidinone antibiotic used to treat a variety of gram-positive infections, including those due to methicillin-resistant *Staphylococcus aureus* and vancomycin-resistant enterococci, as well as nocardia species. It has been reported to increase the risk of lactic acidosis and peripheral neuropathy because it disrupts mitochondrial function. Lactic acidosis usually develops after prolong use of linezolid. Here we report a case of 65 year old female who developed severe lactic acidosis within 5 days of linezolid treatment.

Keywords: Linezolid, *Staphylococcus aureus*, nocardia species

Introduction
Linezolid is an oxazolidinone antibiotic used to treat a variety of gram-positive infections, including those due to methicillin-resistant Staphylococcus aureus and vancomycin-resistant enterococci, as well as nocardia species [1, 2]. Lactic acidosis is an adverse effect that has been associated with other drugs, including metformin and the nucleoside reverse-transcriptase inhibitors [3] but not with linezolid. We report a case in which severe lactic acidosis developed rapidly within 5 days as an adverse effect of linezolid treatment.

Case
A 65 year old female presented with high grade fever, chest pain and cough for 3 days. Chest x ray revealed infiltrates in right middle and lower lobes. Computed tomography of the chest confirmed the findings. Sputum gram stain revealed gram positive cocci. Urine r/m revealed 60-70 pus cells and culture showed *E.coli*. patient was initially started on ceftriaxone and amikacin but continued to deteriorate. Then she was switched to piperacillin-tazobactam and linezolid. In the meanwhile sputum culture report came which showed MRSA sensitive to above drugs. Patient showed clinical improvement. despite clinical improvement patient has persistently low bicarbonate levels and high lactate levels which was 6.9mmol/lts. Both the antibiotics were stopped and the lactates settled to 1.16 mmol/lts in 5 days. Both the drugs were reintroduced and there was rise in serum lactate levels to 3.6mmol/lts on day 3, with other parameters being within normal limits. Piperacillin tazobactam was stopped but lactate levels had increased to 5.6mmol/lts in 5 days. Discontinuation of linezolid resulted in normalization of lactate levels in 7 days. There were no other changes in medications during that time. Patient was then treated with piperacillin-tazobactam and vancomycin. Her lactate levels remained normal and she improved.

Discussion
Lactic acidosis is a toxic effect of linezolid with unknown mechanism. Other drugs, including metformin and nucleoside reverse-transcriptase inhibitors, have been associated with lactic acidosis. In nucleoside reverse-transcriptase inhibitors, lactic acidosis is due to mitochondrial toxicity [4, 5] and linezolid may have the same mechanism. As we report here, a potentially serious side effect occurred in a patient receiving linezolid.

Conclusion
The serum lactate level in patients taking linezolid should be measured if they have nausea or a low serum bicarbonate level. Late linezolid induced lactic acidosis is well known. But in this case toxicity developed earlier within 5 days and resolved rapidly within a week.

Learning point for clinicians
lactic acidosis is not an uncommon finding in critically ill patients. Certain drugs like metformin & nucleoside reverse transcriptase inhibitors are well known culprits. Linezolid induced lactic acidosis is uncommon and when found is usually a late manifestation. But in elderly the behaviour of drug may vary as is in this case, in which the toxicity developed within 5 days and resolved quickly in a week.

References
1. Diekema DJ, Jones RN. Oxazolidinone antibiotics. Lancet 2001; 358:1975-82.
2. Brown-Elliot BA, Ward SC, Crist CJ, Mann LB, Wilson RW, Wallace RJ Jr. *In vitro* activities of

linezolid against multiple Nocardia species. Antimicrob Agents Chemother 2001; 45:1295-7.
3. Gerard Y, Maulin L, Yazdanpanah Y, *et al*. Symptomatic hyperlactataemia: an emerging complication of antiretroviral therapy. AIDS 2000; 14:2723-30.
4. Brinkman K, Ter Hofstede HJM, Burger DM, Smeitink JA, Koopmans PP. Adverse effects of reverse transcriptase inhibitors: mitochondrial toxicity as common pathway. AIDS 1998; 12:1735-44.
5. Coté HCF, Brumme ZL, Craib KJP, *et al*. Changes in mitochondrial DNA as a marker of nucleoside toxicity in HIV-infected patients. N Engl J Med 2002; 346:811-20.