



CASE REPORT

Linezolid Induced Thrombocytopenia: A Case Report

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Abstract

Linezolid (LZD) is an antimicrobial agent with a broad spectrum of activity against virtually all clinically important Gram-positive bacteria, including methicillin-resistant *Staphylococcus aureus* (MRSA), methicillin-resistant coagulase-negative staphylococci (MRCoNS) and vancomycin-resistant enterococci (VRE). Thrombocytopenia (TP) is a common adverse effect of Linezolid (LZD). Prolonged treatment duration, renal insufficiency, chronic liver disease, malignancy, previous vancomycin use, baseline platelet count, and lower body weight have been reported as possible risk factors for LZD-associated TP. Here, we illustrate a case of a 51-year-old male patient diagnosed with pancreatitis and urinary tract infection and was prescribed several antibiotics including Linezolid. In this case, platelets count which were initially normal started declining from day 7 of initiating Linezolid. Linezolid was withdrawn from treatment from day 9. Platelet count gradually came back to normal on day 16. This suggests reversible type of thrombocytopenia by Linezolid. This case illustrates need for careful observation of platelet count during the treatment with Linezolid.

Keywords: Linezolid, Thrombocytopenia, Dechallenge

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1 | INTRODUCTION

Linezolid (LZD) is an antimicrobial agent with a broad spectrum of activity against virtually all clinically important Gram-positive bacteria, including methicillin-resistant *Staphylococcus aureus* (MRSA), methicillin-resistant coagulase-negative staphylococci (MRCoNS) and vancomycin-resistant enterococci (VRE)

[1]. Linezolid is 100% bioavailable, is highly water soluble and has good tissue penetration, therefore it can be administered in equal doses via an oral or parenteral route [2]. LZD does not typically require dose adjustment by body weight (BW) in adults, though dose is determined by weight in pediatric patients [3,4]. Thrombocytopenia (TP) is a common adverse effect in adult patients and the prevalence has been reported about 15–50 % with different

definitions [1]. Prolonged treatment duration, renal insufficiency, chronic liver disease, malignancy, previous vancomycin use, baseline platelet count, and lower body weight have been reported as possible risk factors for LZD-associated TP [1]. Here, we describe a case of reversible thrombocytopenia induced by Linezolid in a patient diagnosed with acute pancreatitis and urinary tract infection.

2 | CASE DETAILS:

A 51 years old male patient was brought to Emergency Medicine Department of a tertiary care hospital on 22/02/2021 with complains of abdominal pain, fever and vomiting. On admission patient was conscious and well oriented with normal temperature, Pulse: 130/min, BP: 122/88 mmHg. Initial laboratory findings included: Hb: **8.9 g/dl** (12-18), WBC: 7.79 kU/L (5.2-12.4), RBC: **3.31 M/mcL** (4.5-5.5), Platelet count: 198 kU/L (130-400), CRP: **135.06 mg/L** (<5), ESR: **65 mm/hr** (0-15 mm/hr), Serum Procalcitonin: **0.45 ng/ml** (0-0.1), Blood Urea: **58.1 mg/dL** (15-45), Serum Creatinine: **1.44 mg/dl** (0.7-1.3), SGPT: **213 U/L** (10-49), SGOT: **247 U/L** (0-34), Alkaline Phosphatase: **257 U/L** (45-129), Serum Lipase: **82 U/L** (6-51), Serum Amylase: 118 U/L (30-118).

Patient was being treated for acute pancreatitis and urinary tract infection from outside hospital since 21/01/2021. Then patient came to our hospital for further treatment. On admission patient was prescribed Inj. Cefepime-Tazobactam 1.25 g IV TDS, Inj. Minocycline 100 mg IV BD, Inj. Linezolid 600 mg IV BD, Inj. Pantoprazole 40 mg IV OD, Inj. Ondansetron 4 mg IV TDS, Inj. Albumin 20% 100

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cc IV OD and Inj. Octreotide 100 mg SC OD.

Lab investigations were performed regularly. Blood platelet counts was normal initially on admission and started declining from day 7 (77 kU/L) which continued declining thereafter (Figure.1)

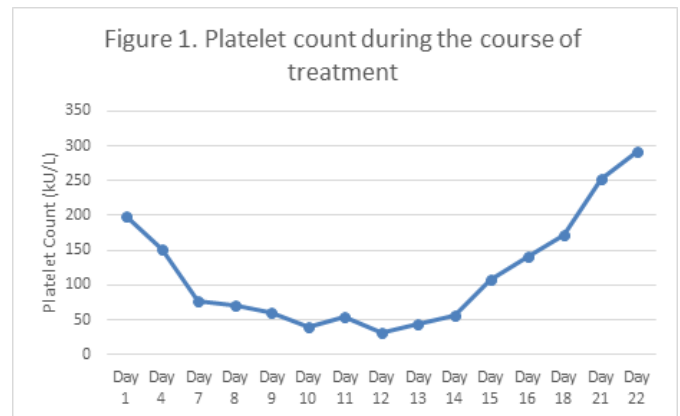


FIGURE 1:

Drug induced thrombocytopenia was suspected. Ongoing treatment included drugs which are known to cause toxic effect on blood parameters like Linezolid, Octreotide and Cefepime-Tazobactam. Sequential dechallenge was decided to be done for these drugs. Inj. Linezolid was withdrawn from treatment on day 9. Platelet counts came back to normal on day 16 and remained normal thereafter. Due to positive dechallenge with linezolid, other drugs were not discontinued. Other blood indices became normal after appropriate treatment of underlying disease. Patient was subsequently discharged on improvement of condition. This case was reported to the closest ADR monitoring centre under Pvpvi via Vigiflow with unique Id: IN-IPC-300512624.

3 | DISCUSSION:

Linezolid, which is primarily bacteriostatic and effective against Gram-positive bacteria, acts by inhibiting bacterial protein synthesis by binding to a site on the bacterial 23S ribosomal RNA of the 50S subunit. It has been associated with reversible, time dependent myelosuppression [5]. Nonetheless, several case reports suggested that patients with LZD-associated TP retain adequate numbers of megakaryocytes in their bone marrow [6,7]. Immune-mediated

platelet destruction has been suggested based on a decreased rate of TP following immunoglobulin therapy^[6]. Given multiple plausible mechanisms, the pathophysiology of LZD-associated TP remains controversial. The reported incidence of linezolid-induced thrombocytopenia varies, ranging from 7.5 to 48% according to the definition of thrombocytopenia^[8]. In our study, platelets count started declining from day 7 of initiating Linezolid and Linezolid was withdrawn from treatment from day 9. After that platelet count came back to normal on day 16. It took 7 days to restore platelet count. This is type of reversible thrombocytopenia and time of platelet count recovery is similar in our case as in other studies^[9,10].

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