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Research Article

Rare side effect of linezolid, used in multiple drug resistant infections, bone marrow depression

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ABSTRACT

Antibiotic resistant infections are an important part of serious adult infections. Increased resistance and treatment difficulties are observed in infections caused by enterococ, staphylococcus and pneumococ. They are drugs used in tissue infections and pneumonia. The most important side effect that limits the use of linezolid, which has a very good clinical efficacy, is bone marrow suppression.An 82-year-old male patient was admitted to the 3rd step intensive care unit due to bacterial pneumonia. The patient developed severe bone marrow depression symptoms during linozolid therapy; after discontinuation of treatment, the pressure on the bone marrow was reversible.Myelosuppression seen during and after linezolid therapy is reversible.

INTRODUCTION

Linezolid is a member of the oxazolidinone group of antibiotics approved by the food and drug administration center (FDA) in adults. It inhibits bacterial protein synthesis by binding to the 50S ribosomal subunit [1]. Myelosuppression; it may be associated with many antibiotics used [2]. As linezolid affects gram-positive bacteria [3], it can cause reversible myelosuppression [4]. In adults, reversible thrombocytopenia usually develops after the 2nd week of treatment. Bone marrow suppression is reported to be reversible [5].

Case

An 82-year-old male patient was hospitalized in the 3rd step intensive care unit due to bacterial pumumony. PO2: 54 was measured in the blood gas of the patient, who was undergoing tachypnea and agitation. He started to receive mechanical ventilator support with the endotracheal tube. The antibiotics of oseltamivire, clarithromycin and meropenem were replaced with linezolid and levofloxacin according to the blood culture result (methicillin-resistant Staphylococcus aureus). The patient who needs serious erythrocyte replacement from the 7th day of treatment due to the low hematological panel in the following days; no abdominal bleeding, pathology of the liver and spleen were detected in the abdominal tomography. The hematologist's opinion was obtained with the prepared peripheral smear. The causes of all pancytopenia were investigated. Iron, iron binding capacity, folate, vitamin b 12 values resulted normally. Results were evaluated for toxicity (no blast, retuculocytosis, platelet clumps, cystocyte or other pathological erythrocytes). On the 14th day of treatment, linezolid was discontinued. Depression on the bone marrow decreased 5 days after the drug was discontinued and the values reached normal levels. No need for replacement. The patient was extubated due to the improvement in his clinic on the 10th day of intubation, and her departure was planned.

Discussion

Oxazolidinone linezolid; approved for use in gram-positive infections, including methicillin-resistant Staphylococcus aureus (MRSA) and vancomycin-resistant Enterococcus faecium (VRE). Linezolid-related hematological effects are mild to moderate, while reversible anemia or cytopenia usually occurs after 4 weeks of treatment. Long term linezolid related thrombocytopenia or anemia occurs after more than 14 days of treatment [6]. In this case; The findings of bone marrow depression observed on the 7th day of treatment began to decrease after the 5th day of treatment.

Linezolid-induced myelosuppression; Anemia in three cases has been reported with reticulocytopenia and thrombocytopenia [7]. Many antimicrobial agents; affects the hematopoietic system. The most well-known is irreversible aplastic anemia, which is originated from chloramphenicol and has a rate of 1 / 40-60.000

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[8]. Anemia, thrombocytopenia and leukopenia occur in less than 1% of patients receiving amoxicillin-clavulanic acid [9]. Ceftriaxone causes eosinophilia and leukopenia in 6% and 2.1% of patients, respectively, and anemia, neutropenia, and thrombocytopenia each occur in less than 1% of patients [10].

	WBC* 10^3/µl	neutrophil 10^3/µl	lymphocyte 10^3/µl	hemoglobine 10^3/µl	platelet 10^3/µl	procalcitonin	replacement
Geliş	22,3	20,81	1,42	11,6	475	5,42	
3. gün	9,6	7,41	1,59	9,3	225	4,72	1 ünites
7. gün	8,7	6,51	0,72	9,2	219	0,43	
10. gün	7,06	6,43	0,42	5,6	82	0,22	3 ünites
14. gün	5,8	4,73	0,74	8,6	44	0,31	2 ünites
17. gün	4,89	3,71	0,79	7,1	37	0,16	3 ünites
19. gün	7,11	5,53	0,87	8,8	55		
21. gün	10,18	7,65	1,34	11,6	54	0,65	

Table 1: Patient's laboratory data and need for replacement

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