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# A CASE PRESENTATION ON CHLORAMPHENICOL INDUCED PANCYTOPENIA

Medical Science

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## ABSTRACT

Chloramphenicol is a semi synthetic,broad spectrum antibiotic derived from Streptomyces venezualaewith bacteriostatic activity as it inhibits bacterial protein synthesis.Chloramphenicol remains an important inpatient antibiotic used in treating certain life-threatening infections .We report an adverse drug reaction chloramphenicol induced pancytopenia in a patient with severe traumatic brain injury caused by road traffic accident, treatment was initiated based on literature analysis. He acquired Multi drug resistant Klebsiellapneumoniae. Chloramphenicol was initiated which caused pancytopenia.

## KEYWORDS

Chloramphenicol, Klebsiellapneumoniae, pancytopenia.

**Introduction:**

Chloramphenicol is a broad spectrum antibiotic isolated from cultures of Streptomyces venezualaein 1947 which is useful for the treatment of various bacterial infections. It is bacteriostatic, as it reversiblybinds to the bacterial 50S ribosomal subunit. The binding interferes with peptidyltransferase activity, thereby prevents transfer of amino acids to the growing peptide chains and blocks peptide bond formation.Chloramphenicol remains an important inpatient antibiotic used in treating certain life-threatening infections .Being highly toxic, it is still prescribed at a noticeable rate(1). It is recommended to be prescribed to be only when there is no other alternative is present with a monitoring of its concentration in patients body(1). Even being a potent antibiotic, the use is limited due to its association with aplastic anaemia(2)and bone marrow suppression(3).The literature analysis illustrates the consequent hematological abnormalities may be due to the pharmacological dose dependent effects of the drug or the idiosyncratic reactions which are irreversible. The pathophysiology is the nitrated benzyl radical of chloramphenicol is responsible for the hematopoietic depression(4,5)..Here we report a case with chloramphenicol induced pancytopenia.

**Case presentation:**

A 54 years old male patient from southern part of India was admitted in a local hospital due to road traffic accident with severe head injury and was in comatosed condition. He was on adrenaline support, low molecular weight heparin, antiepileptics, vitamin C, analgesics and other supportive therapy.He was presented with continues fever spikes and low urine output . Urine culture reported Multi drug resistant Klebsiellapneumoniae sensitive to imipenem, tracheal tube secretion cultures reported Multi drug resistant Klebsiella pneumonia sensitive to tigecycline and PAN sensitive Pseudomonas aeruginosa . As per culture sensitivity pattern, the treatment was optimized to tigecycline, imipenem+cilastin .The infection was still present even after appropriate antibiotics were given, then chloramphenicol was initiated. He developed gradual decrease in RBC, WBC, Platelets suspecting chloramphenicol induced pancytopenia. A rise in RBC, WBC, Platelets was observed after discontinuation ofchloramphenicol . He developed multiple organ failure due to worsening of symptoms the patient succumbed to cardiac arrest and passed away.

**Discussion:**

Drug causing aplastic anemia are chloramphenicol, butazone, sulfonamide, gold salts, penicillamine, amidopyrine, trimethoprim/ sulfamethoxazole, methimazole, and felbamate (6,7,8, 9). Chloramphenicol is the leading cause of drug-induced aplastic anemia (10,11).The incidence of chloramphenicol induced pancytopenia is 1 in 40,000 cases as mentioned in Wallerstein study of chloramphenicol therapy and fatal aplastic anemia.(12)

Our case report illustrates the importance of limitation of chloramphenicol utility due to its toxic profile and availability of alternative safer antibiotics. The nitrated benzene radical in chloramphenicol may be responsible for hematopoietic depression (4,5),thrombo-cytopenia, granulocytopenia, anemia and liver damage. In our case report we estimated the potential cause of pancytopenia by various factors like pharmacological dose dependent concentration of the drug with might cause the hematological abnormality or the nitrated benzene radical of chloramphenicol responsible for hematopoietic depression.We concluded that chloramphenicol causes pancytopenia with the recovery of the hematological parameters after the abrupt discontinuation of the chloramphenicol. We could not re-challenge the drug due to its potential toxicity and the worsening condition of the patient.

The literature analysis supports our findings, similar case was reported in Massachusetts general hospital in a 52 year old post renal transplant patient (13),complete hematologic and hepatic recovery in a patient with chloramphenicol hepatitis-pancytopenia syndrome(5) and another case report of 12 year old patient with brain abscess which was evident with the elevated serum levels of chloramphenicol. Unfortunately due to worsening of the condition and multiple organ dysfunction the patient succumbed to cardiac arrest and passed away even after the withdrawal of the drug.

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