

Concurrent Therapy-Induced Red Man Syndrome in an Infant- A Case Report

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Abstract- Vancomycin, vital in paediatric care, exhibits varied side effects. Instances of adverse reactions during concurrent medication use, particularly in infants, are limited. We present an infant's unique adverse reaction to vancomycin alongside amoxicillin-clavulanic acid. A 9mo old infant, admitted with respiratory distress, developed erythematous rashes within minutes of vancomycin infusion. Ceasing vancomycin alleviated the rash, yet subsequent respiratory distress required non-invasive support. Blood cultures were sterile, and the child recovered after a 7d injectable amoxicillin-clavulanic acid course. This rare case highlights an infant's adverse reaction post-vancomycin infusion, emphasizing the complexity of Red Man Syndrome (RMS). Despite no apparent risk factors, the role of amoxicillin-clavulanic acid in RMS warrants exploration during combined vancomycin therapy, notably in infants.

Keywords: Vancomycin, Red Man Syndrome (RMS), Infant, Concurrent Medication, Amoxicillin-Clavulanic Acid.

INTRODUCTION:

Vancomycin is a widely used antibiotic in paediatric care, and the drug of choice in methicillin resistant staphylococcus infection. Route of vancomycin use may be oral or intravenous infusion according to the indication. Though intravenous route is more commonly associated with adverse reaction due to histamine release, both the routes may be associated with side effects. There have been limited instances documented in literature regarding adverse reactions occurring when vancomycin is administered concurrently with other medications, particularly in infants. We hereby report a unique case of an infant experiencing a typical adverse reaction to vancomycin following concurrent therapy with amoxicillin-clavulanic acid and vancomycin injections.

CASE REPORT:

A 9mo old male infant was admitted with fever, cough and breathing difficulty for 5d. On examination, temperature was 38 degrees Celsius, pulse rate 142/min, regular, respiratory rate 70/min, and SpO₂ was 95%. Anthropometric parameters were normal for his age. He had regular respiration with intercostal and subcostal retractions, and bilateral extensive wheeze and crepitations, with normal other systemic examination findings. He was started on injection amoxicillin-clavulanic acid, paracetamol, nebulisation with hypertonic saline and salbutamol for provisional diagnosis of pneumonia. On investigation, haemoglobin 9.7gm%, platelet $2.55 \times 10^5/L$, total count $8.4 \times 10^9/L$, sodium 136, potassium 4.8, chloride 104, urea 22, creatinine 0.2, CRP 82.1 and chest x-ray at admission was normal. On day2 of admission, the respiratory distress was increased with requirement of supplemental oxygen, and repeat chest x-ray showed opacities involving both the lung fields. Antibiotic was upgraded to ceftriaxone and vancomycin after sending blood culture. Child developed erythematous rashes and wheals 10min after starting vancomycin infusion, started first over the face, cheek, neck, involved upper trunk and right thigh. Vancomycin infusion was stopped immediately and vitals were monitored. Child was irritable, heart rate 120/min, blood pressure was normal (100/57mmHg), respiratory rate 68/min, with subcostal retractions, spo₂ 99% on nasal prongs at 1L per min, on chest auscultation bilateral crepitations were present. Injection vancomycin infusion was stopped immediately and gradually the rash disappeared after about 12h. The child received injection amoxicillin-clavulanic acid about 2h prior starting injection vancomycin infusion. Respiratory distress was increased; however, the child was managed with non-invasive respiratory support. Blood culture came sterile after 48h. Supplemental oxygen was stopped after about 48h. The child was discharged home after 7d of injectable amoxicillin-clavulanic acid.



Fig.1: Rashes in the index case suggestive of Red Man Syndrome

DISCUSSION:

Two types of hypersensitivity reactions occur with vancomycin, Red Man Syndrome (RMS) and anaphylaxis [1]. RMS is an infusion-related reaction that occurs about 4-10min after an infusion started, or may appear after the completion of infusion, especially in patients who are on vancomycin therapy for more than 7d [2]. It is often associated with rapid (<1h) infusion of the first dose of vancomycin. Symptoms typically consist of pruritus, an erythematous rash that involves the face, neck, and upper torso. Hypotension and angioedema are rare. Most of the symptoms are mild, which disappear at the end of the transfusion. Incidence of RMS varies from 3.7 to 47% [1]. A few risk factors are identified for development of RMS in children including Caucasian ethnicity, age $\geq 2y$, previous RMS history, higher vancomycin dose ($\geq 10mg/kg$), vancomycin concentration $\geq 5mg/mL$ and antecedent antihistamine use [3]. RMS was also reported following oral vancomycin therapy in a 23mo old child with acute myeloblastic leukaemia with clostridium difficile infection [4]. In a randomized controlled trial in febrile, neutropenic children who received vancomycin, ticarcillin, and amikacin, as compared with vancomycin placebo, ticarcillin-clavulanate, and amikacin as initial empirical therapy, rashes consistent with the RMS occurred in three patients in each group, out of 53 and 48 patients respectively [5]. The similar incidence of RMS in both the groups was probably because of clavulanic acid component present in the vancomycin placebo group.

In the index case, who is an eight months old infant develops symptoms consistent with RMS 10min after starting injection vancomycin at $10mg/kg/dose$ over 1h. The child also received injection amoxicillin-clavulanic acid around 2h prior starting injection vancomycin infusion. Symptoms consistent with RMS is reported in adult case study following injection amoxicillin-clavulanic acid [6]. Concurrent use of amoxicillin-clavulanic acid and vancomycin injection was believed to contribute in the development of RMS in the index case, who was a case with no apparent risk factor for development of RMS [3].

CONCLUSION:

This study stands out for its rarity in literature, as instances of adverse reactions during concurrent vancomycin therapy with other drugs, especially in infants, are scarcely reported. The report details an unparalleled event: an infant experiencing an adverse reaction to vancomycin alongside amoxicillin-clavulanic acid. The sudden onset of rashes, wheals, and respiratory distress post-vancomycin infusion, notably absent predisposing factors, is significant. This infant's case, exhibiting RMS symptoms post-vancomycin infusion, prompts exploration into the potential role of amoxicillin-clavulanic acid in RMS development, a unique aspect in an infant devoid of apparent predisposing factors.

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