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Hyperkalemia and Pseudohyperkalemia in Pediatric Patients with Hematologic Malignancies: A Single Center experience

Yung-Chieh Huang[1], Fang-Liang Huang[2], Sheng-Ling Jan[2], Lin-Shien Fu[1]
[1]Department of Pediatrics-Nephrology, Taichung Veterans General Hospital, Taiwan
[2]Department of Department of Pediatrics, Taichung Veterans General Hospital, Taiwan

Objectives : Hyperkalemia is a medical emergency that can occur in patients with newly diagnosed hematological malignancies with large cellular burdens. Nevertheless, pseudohyperkalemia due to tumor cell lysis in vitro can lead to a wrong direction of treatment. Pseudohyperkalemia has been widely reported in literature regarding adult hematological malignancies, but rarely in pediatric patients.
Methods : In this study, we reviewed the medical records of pediatric patients with newly diagnosed hematological malignancies between 2011 and 2022. Hyperkalemia was defined as serum or plasma potassium level above 5.5 mEq/L. Pseudohyperkalemia was defined as no relevant ECG change, or lower potassium level (more than 1 mEq/L) in the second measurement within 4 hours without intervention. Apparent red blood cell hemolysis was excluded from our analysis.
Results : There were 158 pediatric patients with newly diagnosed hematological malignancies in 2011-2022. Fifteen patients had hyperkalemia. Eight patients (5.1%) were recognized as pseudohyperkalemia in follow-up, and all of them had hyperleukocytosis (white blood cell count greater than 100,000/mL). All the episodes of pseudohyperkalemia occurred in the pediatric emergency room, while all real hyperkalemia episodes occurred in the ordinary ward or intensive care unit. Patients with pseudohyperkalemia had significantly lower sodium level comparing to non-hyperkalemia patients.
Conclusions : In our experience, pseudohyperkalemia can be as frequent as real hyperkalemia among patients with newly diagnosed hematological malignancies. Early recognition of pseudohyperkalemia can avoid improper potassium-lowering management in these patients.