Acute tumor lysis syndrome secondary to a single-dose methylprednisolone in acute lymphoblastic leukemia

Akut lenfoblastik lösemide tek doz metilprednizolona sekonder olarak gelişen akut tümör lizis sendromu

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To the Editor

There are very few reports in the English literature regarding cases with acute lymphoblastic leukemia (ALL) who developed acute tumor lysis syndrome (ATLS) after a single dose of steroid at the beginning of the chemotherapy [1-6]. Herein, we present a child with T-cell ALL who developed ATLS after methylprednisolone (2 mg/kg) therapy.

A seven-year-old, previously healthy girl was admitted to our Department of Pediatrics with a two-week history of anorexia and fever. Her physical examination showed diffuse petechiae and ecchymoses and diffuse lymphadenomegaly in the cervical, submandibular, axillary, and inguinal regions. She had mild hepatomegaly but no splenomegaly. Initial investigations showed: hemoglobin 5.9 g/dl, hematocrit (Htc) 17.5%, white cell count 1100/mm^3 (blasts 90%), platelets 15000/mm^3, ALT: 22 IU/L, AST: 35 IU/L, total protein: 5.7 g/dl, albumin: 3.7 mg/dl, calcium (Ca): 7.5 mg/dl, phosphorus: 2.13 mg/dl, BUN: 11 mg/dl, creatinine: 0.5 mg/dl, uric acid: 2.6 mg/dl, sodium (Na): 130 mEq/L, potassium (K): 4.3 mEq/L, chloride: 103 mEq/L, and lactate dehydrogenase: 1294 IU/L. Chest X-ray showed right hilar lymphadenopathy (LAP). Bone marrow aspiration revealed 100% blasts (ALL L1-2). Ninety-two percent of the blasts were CD7 and CD5-positive and CD13, CD33, CD10, CD19, CD20, CD22, CD14 and HLA-DR-negative. The cerebrospinal fluid was clear, and there were no blast cells. Erythrocyte suspension transfusion was planned but Coombs test was positive. She was given methyl prednisone (2 mg/kg; 40 mg total) before blood transfusion. Thirteen hours later her general condition worsened and she started vomiting. Serum biochemical analysis was studied again and demonstrated: hemoglobin: 8.5 g/L, Htc: 23%, WBC: 0.2x10e9/L, BUN: 60 mg/dl, creatinine: 2.2 mg/dl, uric acid: 9.8 mg/dl, Na: 138 mEq/L, K: 2.9 mEq/L, Ca: 6.4 mEq/L, and phosphorus: 7.2 mg/dl. ATLS was considered in this patient, and intravenous forced alkaline over hydration (3000 ml/m^2/day), allopurinol (300 mg/m^2), and furosemide (1 mg/kg/day) therapy was initiated. Blood biochemistry and complete blood cell count were monitored every 12 hours [7]. When the laboratory tests were normal on the third day, the chemotherapy program was started. She is still in remission on the St. Jude T XIII maintenance chemotherapy.

In our patient, there was no evidence of ATLS prior to the methyl prednisone therapy. Thirteen hours later, azotemia, hyperuricemia, hyperphosphatemia, and hypocalcemia developed.

When chemotherapy is started with the diagnosis of ALL, even if leukocyte count is not very high, a careful monitoring for ATLS must be done, and serum calcium, phosphorus, electrolytes, creatinine, and uric acid should be checked every 5-6 hours, especially during the first week of therapy.

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Conflict of interest

Informed consent was obtained from the patient and her family. No author of this paper has a conflict of interest, including specific financial interests, relationships, and/or affiliations relevant to the subject matter or materials included in this manuscript.

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