

## Case Report:

# An Unusual Clinical Presentation of Acute Lymphoblastic Leukemia in a Child

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## Abstract

**Background:** Acute lymphoblastic leukemia (ALL) is an aggressive disease, which cause accumulation of immature early bone marrow hematopoietic cells known as blast cells.

**Objective:** To report an unusual presentation of a case of acute lymphoblastic leukemia in a Saudi female child.

**Case Report:** A four-Year old Saudi girl presented to Abha Maternal and Children's Hospital, Saudi Arabia, with repeated hematemesis. She had a history of fever reaching 39 °C, which started 5 days earlier and responded to antipyretics, with no chills or rigor. On physical examination, the patient was conscious, alert, pale, lethargic, with mild dehydration. Respiratory rate was 30 breaths/minutes, and the heart rate was 135 beats/minutes. Her growth parameters were normal. Bone marrow aspirations revealed being markedly infiltrated by blast cells, with marked reductions of all normal cells. Therefore, the case was diagnosed as acute leukemia, most probably acute lymphoblastic leukemia. She was referred to the Comprehensive Cancer Center at King Fahad Medical City in Riyadh, to start her chemotherapy course for management of her condition.

**Conclusions:** Uncommon clinical presentations include hematemesis and diarrhea may lead to delay in diagnosis. Awareness of the uncommon signs and symptoms of childhood acute lymphatic leukemia helps in early diagnosis and proper management of patients.

**Key Words:** *Acute lymphoblastic leukemia – Uncommon clinical presentations – Children – Saudi Arabia.*

## Introduction

ACUTE lymphoblastic leukemia (ALL) is a malignant transformation and proliferation of lymphoid progenitor cells in the bone marrow, blood and extramedullary sites, which mostly occurs

among children (80%) [1]. It is an aggressive disease, which causes accumulation of immature early bone marrow hematopoietic cells known as blast cells [2].

Worldwide, ALL is the most common type of cancer and leukemia affecting children, accounting for approximately 25% of all childhood cancers and 75% of pediatric leukemia cases. Furthermore, it affects 4.4 of 100,000 children, with the highest incidence occurring between 3 and 5 years of age [3].

In Saudi Arabia, ALL constitutes almost 70% of pediatric leukemia cases in boys and 69% in girls [4].

The aim of this article is to report a very unusual presentation of a case of acute lymphoblastic leukemia in a Saudi female child.

## Case Report

A four-Year old Saudi girl, who has been medically free before, presented in January 12th, 2017 to Abha Maternal and Children's Hospital, Saudi Arabia, with repeated hematemesis.

During last 2 days, there was vomiting, around 3-4 times/day, with food contents, non-bilious, and non-projectile. There was watery diarrhea, around 3 times/day, with no mucus or blood. The patient was escorted to a primary health care center, where she was diagnosed as a case of acute gastroenteritis and oral rehydration therapy was prescribed to her. However, six hours later, she developed hematemesis, with large amount more than 7 times with markedly decreased activity. Therefore, the family

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called an ambulance to transport the girl to our hospital.

She had a history of fever reaching 39 °C, which started 5 days earlier and responded favorably to antipyretics, with no chills or rigor.

The patient had no history of abdominal pain or jaundice, no history of bleeding from any other orifices, no history of cough, shortness of breath or hemoptysis, no history of abnormal movement or altered level of consciousness, no history of weight loss, no history of drug ingestion or foreign body ingestion. There was no history of any hematological diseases in the family.

The patient was delivered full-term by Cesarean section, with no neonatal intensive care admission. Past medical or surgical conditions were unremarkable. Her vaccinations were up-to-date. She was developmentally appropriate to her age. She was on the same family diet.

Her father was 50 years old and healthy, while her mother was 35 years old and healthy. She had six siblings who were healthy. The family were living in their own house, with good income. There was no history of chronic diseases, or any similar condition in the family.

On physical examination, the patient was conscious, alert, pale, lethargic, with mild dehydration. She was not jaundiced, afebrile, not in respiratory distress. Her body temperature was 37.7 °C, respiratory rate: 30 breaths/minutes, heart rate: 135 beats/minutes, oxygen saturation: 95% in room air, and blood pressure: 101/73 mmHg. Her growth parameters showed weight: 14kg (on 50<sup>th</sup> percentile), height: 96cm (above 25<sup>th</sup> percentile), and head circumference: 49cm (on 50<sup>th</sup> percentile). Her throat was congested. Chest examination revealed equal bilateral air entry, with no added sounds. Cardiovascular examination showed normal first and second heart sounds, no murmur, with no added sounds.

Capillary refill time was 3 seconds. Abdominal examination revealed soft, lax abdomen, not distended and no hepatosplenomegaly. There was no tenderness, no visible dilated veins, no ascites, or palpable mass. Central nervous system examination revealed that the girl was oriented, lethargic with normal power, tones and reflexes. There was no skin rash, no lymph node enlargement, joint swelling or deformity.

The patient was admitted to the Pediatrics Department and omeprazole (1mg/kg/dose twice

daily and octreotide infusion were prescribed. The hematemesis stopped next day.

Laboratory investigations revealed blood glucose: 98mg/dl, blood urea nitrogen: 16mg/dl, creatinine: 0.42mg/dl, sodium: 134mmol/l, potassium: 3.8mmol/L, calcium: 7.8mg/dl, corrected calcium: 8.2mg/dl, albumin: 3.5g/dl, aspartate aminotransferase (AST): 20U/L, alanine aminotransferase (ALT): 11U/L, total bilirubin: 0.4mg/dl, direct bilirubin: 0.2mg/dl, alkaline phosphatase: 80U/L, pH: 7.37, PCO<sub>2</sub>=32.4mmHg, HCO<sub>3</sub>: 19mmol/l, base excess (BE): -5mmol/l, prothrombin time (PT): 35 seconds, partial thromboplastin time (PTT): 14.5 seconds, International Normalized Ratio (INR): 1.25, blood film for malaria: Negative, brucella titer: Negative, Epstein Barr Virus (EBV): Non-reactive, cytomegalovirus (CMV): N/A, and blood culture and sensitivity: No growth.

Bone marrow aspirations revealed being markedly infiltrated by blast cells, with marked reductions of all normal cells. Therefore, the case was diagnosed as acute leukemia, most probably acute lymphoblastic leukemia (ALL). Therefore, she was referred to the Comprehensive Cancer Center at King Fahad Medical City in Riyadh, which is one of the main references for hematology and oncology patients in the Ministry of Health, to start her chemotherapy course for management of her condition.

## Discussion

Our patient presented with an unusual clinical feature, with repeated hematemesis that was preceded two days earlier with vomiting and diarrhea. Her condition started with fever that could be controlled by antipyretics. She was pale, lethargic, with tachycardia.

Al Omari et al. [5] who conducted their case series at a tertiary hospital in Saudi Arabia, noted that not all patients with ALL had the same presenting clinical features, but there were some common features. Most ALL patients complain of high or low fever, presented by 70% of the patients while pallor was present in 54%. The least frequent symptom was vomiting, which was present only in 4% of cases.

Spivak [6] noted that symptoms may be present for only days to weeks before diagnosis. Disrupted hematopoiesis leads to the most common presenting symptoms (e.g., anemia, infection, easy bruising and bleeding). Other presenting symptoms and signs are usually nonspecific (e.g., pallor, fatigue,

fever, malaise, tachycardia) and are attributable to anemia and a hypermetabolic state.

Biswas et al. [7] stated that, as the disease progresses, pallor, bleeding tendency, hepatosplenomegaly and lymphadenopathy may appear. However, uncommonly, joint pain, proptosis, abdominal pain, melena, diarrhea, dysphagia etc. can also be noted as initial manifestation, which may bewilder the clinician as well as the pathologists. They added that that uncommon signs and symptoms among ALL patients were abdominal pain (9.3%), joint pain (9.3%), hematemesis and melena (8%), diarrhea (5.33%), proptosis (2 cases), dysphagia, mediastinal mass and parotid swelling (1 case each).

Apart from the prolonged PT and the low ALP levels found in our patient, laboratory investigations mostly revealed normal results. The definite diagnosis for our patient was reached by bone marrow examination which showed markedly infiltrated by blast cells.

The UCSF [8] stated that symptoms and signs of ALL are not sufficient to establish the diagnosis. However, further investigations are required to confirm it, such as a complete blood count, blood smear examination and bone marrow examination (aspiration or needle biopsy), which can provide the first evidence of ALL.

Al Omari et al. [5] reported that the median age at diagnosis of ALL was 4 years, which was less than those reported in studies performed in Morocco (7 years) [9] and Egypt (5 years) [10]. Moreover, Al Omari et al. [5] found that the male-to-female ratio was 1.4:1.

Shakibazad et al. [11] reported that ALL is common type of malignancy in childhood with known presentation of cytopenias, organomegaly, lymphadenopathy and bone pains. The other unusual initial presentations of ALL include renal involvement (14.6%), neurologic signs (14.6%), orbital manifestations (12.2%), pericardial involvement (4.9%) and other rare miscellaneous presentations (19.5%). The clinician must be familiar with these unusual presentations of ALL in pediatrics in order to avoid delay diagnosis of this disease and increase survival by early detection.

Biswas et al. [7] stressed that uncommon clinical presentations among ALL patients may lead to delay in diagnosis. Awareness of uncommon signs and symptoms of childhood leukemia together with laboratory tests help in early diagnosis and proper management of the patients.

In conclusion, ALL is the most common type of cancer and leukemia affecting children. Most patients complain of fever. Uncommon clinical presentations include hematemesis and diarrhea may lead to delay in diagnosis. Therefore, awareness of the uncommon signs and symptoms of childhood leukemia helps in early diagnosis and proper management of patients.

## References

- 1- TERWILLIGER T. and ABDUL-HAY M.: Acute lymphoblastic leukemia: A comprehensive review and 2017 update. *Blood Cancer Journal*, 7, e577, 2017.
- 2- HOFFBRAND A.V., MOSS P.A. and PETTIT J.E.: *Essential Haematology*. 5th ed. Oxford: Blackwell Publishing Ltd., p. 157, 2006.
- 3- HOURIGAN M.J. and GOLDSTONE A.H.: Acute Lymphoblastic Leukemia: Epidemiology. In: Advani A., Lazarus H. (eds) *Adult Acute Lymphocytic Leukemia*. Contemporary Hematology, Humana Press, 2011.
- 4- AL-EID H.S., ARTEH S.O., BAZARBASHI S. and AL-ZAHRANI A.: Cancer Incidence Report Saudi Arabia 2009. Kingdom of Saudi Arabia: Saudi Cancer Registry, 2009.
- 5- AL OMARI A.S., HUSSEIN T.A., ALBARRAK K.A., HABIB A.K., SAMBAS A.A., SHEBLAQ N. and OMAIR A.: Clinical characteristics and outcomes of acute lymphoblastic leukaemia in children treated at a single tertiary hospital in Riyadh, Saudi Arabia. *J. Health Spec.*, 6: 14-18, 2018.
- 6- SPIVAK J.L.: Acute Leukemia Overview. Merck Manual, Professional Version. Available from: <https://www.merckmanuals.com/professional/hematology-and-oncology/leukemias/acute-leukemia-overview#v974813>. [Last accessed on 2018, March 19t.
- 7- BISWAS S., CHAKRABARTI S., CHAKRABORTY J., PAUL P.C., KONAR A. and DAS C.: Childhood Acute Leukemia in West Bengal, India with an Emphasis on Uncommon Clinical Features. *Asian Pacific Journal of Cancer Prevention*, 10: 903-906, 2009.
- 8- UCSF Medical Center: Acute Lymphoblastic Leukemia. Diagnosis, 2018. Available from: [https://www.ucsfhealth.org/conditions/acute\\_lymphoblastic\\_leukemia/](https://www.ucsfhealth.org/conditions/acute_lymphoblastic_leukemia/). [Last accessed on 2018 March 19].
- 9- BACHIR F., BENNANI S., LAHJOUJI A., CHERKAOUI S., HARIF M., KHATTAB M., et al.: Characterization of acute lymphoblastic leukemia subtypes in Moroccan children. *Int. J. Pediatr.*, 2009: 674801, 2009.
- 10- HUSSEIN H., SIDHOM I., NAGA S.A., AMIN M., EBIED E., KHAIRY A., et al.: Outcome and prognostic factors of acute lymphoblastic leukemia in children at the National Cancer Institute, Egypt. *J. Pediatr. Hematol. Oncol.*, 26: 507-14, 2004.
- 11- SHAKIBAZAD N., HAGHPANAH S. and SHAHRIARI M.: Leukemia and Hematologic Oncology. Unusual presentation of acute lymphoblastic leukemia in children: A systematic review. *J. Hematol. Thrombo. Dis.*, 4 (5 Suppl): 37, 2016.

## أعراض سريرية غير مألوفة للوكيميا الليمفاوية الحادة فى الأطفال: تقرير حالة

الخلفية: إن اللوكيميا الليمفاوية الحادة مرض عدوانى، يتسبب فى تراكم خلايا الدم فى مرحلة ما بعد النخاع العظمى غير الناضجة.

الهدف: تقرير لعرض غير مألوف لطفلة سعودية مصابة بسرطان الدم الليمفاوى الحاد.

تقرير الحالة: جاءت طفلة سعودية عمرها أربع سنوات إلى مستشفى أبيها للأمومة والطفولة، مصابة بقیء دموى متكرر، وقد سبق ذلك بخمسة أيام إصابتها بارتفاع درجة حرارة وصلت إلى ٣٩ درجة مئوية، وقد استجابت حالتها لمخفضات الحرارة. وبالفحص الأكلينيكي كانت المريضة واعية، يقظة، وشاحبة، مصابة بالخمول، وجفاف خفيف وكان معدل التنفس ٣٠/دقيقة، وكان معدل النبض ١٣٥/دقيقة، وكانت معدلات نموها طبيعية. وكشفت خزعات النخاع العظمى عن اختراق خلايا الدم بشكل ملحوظ، مع نقص ملحوظ فى عد جميع الخلايا الطبيعية. لذلك، فقد تم تشخيص الحالة على أنها سرطان الدم الحاد، على الأرجح اللوكيميا الليمفاوية الحادة. وقد أحيلت المريضة إلى مركز السرطان الشامل بمدينة الملك فهد الطبية بالرياض، وذلك للبدء بدورة العلاج الكيميائى الخاصة لعلاج حالتها.

الاستنتاجات: إن الأعراض السريرية غير الشائعة لمرضى اللوكيميا الليمفاوية الحادة تشمل القيء الدموى والإسهال، وعدم الإلمام بها قد يؤدي إلى تأخر التشخيص. ويساعد وعى الأطباء بالأعراض غير الشائعة للأطفال المرضى باللوكيميا الليمفاوية الحادة فى التشخيص المبكر وبدء العلاج السليم للمرضى.