Low backache in adults as an initial presentation of acute lymphoblastic leukemia

Gunjan Garg¹, Naveen Chawla¹, Atul Gogia¹, Atul Kakar¹

¹Department of Medicine, Sir Ganga Ram Hospital, New Delhi, India

ABSTRACT

Low backache as an initial manifestation of acute lymphoblastic leukemia (ALL) in adults has been rarely reported. In this hematological disorder, although bone marrow is replaced by malignant cells, not many cases of low backache as an initial presentation of ALL are reported. We present a series of clinical cases with low backache, which on evaluation found to have ALL.

Keywords: Acute lymphoblastic leukemia, adult, low backache

Introduction

Low backache accompanying alarming features such as fever, unexplained weight loss, night pains, extremes of age, drug abuse, and significant aggravation of pain on movement requires further evaluation. Herein, we report five interesting cases of low backache which turned out to be rare adulthood leukemia. We shall also discuss the possibility of the existence of different subset of adulthood acute lymphoblastic leukemia (ALL).

Case Reports

Case 1

An 18-year-old male presented with severe noninflammatory type of low back pain, fever, and significant weight loss for 3 months. On physical examination, he was febrile (100°F) and had tachycardia (pulse 100/min). Bony tenderness was not elicited. Systemic examination including musculoskeletal was unremarkable. All laboratory investigations (complete blood counts and renal and liver function tests) were normal including peripheral blood smear, except for serum C-reactive protein (CRP) (20 mg/dl) and erythrocyte sedimentation rate (110 mm 1st h) which were elevated. Chest radiograph and ultrasound of the abdomen were normal. Magnetic resonance imaging (MRI) of the whole spine revealed altered signal intensity throughout vertebral column, suggesting infiltrative disease [Figure 1]. Aspiration of marrow was a dry tap, but bone marrow biopsy and marrow imprint smears were taken and revealed diagnosis of ALL.

Case 2

An 18-year-old female presented with complaints of fever and low backache for 1 month. She was febrile (100°F) and had tachycardia (pulse 100/min). No bony tenderness was observed. Systemic examination was unremarkable. Laboratory examination revealed hemoglobin – 9.1 g/dl, total leukocyte count – 8100/µl, and platelet count – 81,000/µl. Peripheral blood smear showed normocytic normochromic red blood cells with mild anisocytosis and thrombocytopenia. Erythrocyte sedimentation rate (101 mm 1st h) and CRP (90 mg/dl) were raised. Renal and liver function tests were normal. Chest radiograph and ultrasound of the abdomen were normal. Mantoux test and viral markers (HIV, hepatitis B and C) were negative. MRI of the spine was suggestive of infiltrative disease [Figure 2]. Bone marrow examination showed ALL.

How to cite this article: Garg G, Chawla N, Gogia A, Kakar A. Low backache in adults as an initial presentation of acute lymphoblastic leukemia. J Family Med Prim Care 2017;6:434-6.
Case 3
A 30-year-old male admitted with low backache, fever, and weight loss for 5 months. Back pain was noninflammatory in nature, and fever was low grade and intermittent. On physical examination, he was febrile (101°F) and pale and had tachycardia (pulse 110/min). Systemic examination including musculoskeletal was unremarkable. Laboratory test revealed hemoglobin – 9.5 g/dl, total leukocyte count – 8700/µl, platelet count – 2.75 lakhs/µl, erythrocyte sedimentation rate – 130 mm 1st h, and serum CRP – 10 mg/dl. Peripheral blood smear showed microcytic hypochromic to normocytic normochromic red blood cells with moderate anisocytosis. Renal and liver function tests were normal. Chest radiograph and ultrasound of the abdomen were noncontributory. Viral markers (HIV, hepatitis B and C) were negative. Mantoux test was negative. In view of severe back pain, MRI of the whole spine was done which revealed diffuse infiltration of the spine, possibly due to infiltrative disease. Bone marrow examination showed ALL.

Case 4
A 35-year-old female admitted with fever and low backache for 1 month. On physical examination, she was febrile (100°F) and had tachycardia (pulse 100/min) with no bony tenderness. Systemic examination was unremarkable. Laboratory test revealed hemoglobin – 10.3 g/dl, total leukocyte count – 4400/µl, platelet count – 134,000/µl, erythrocyte sedimentation rate – 130 mm 1st h, and CRP – 36 mg/dl. Peripheral blood smear showed normocytic normochromic red blood cells with mild anisocytosis. Renal and liver function tests were normal. Chest radiograph and ultrasound abdomen were normal. Mantoux test and viral markers (HIV, hepatitis B and C) were negative. MRI of the spine was suggestive of infiltrative disease [Figure 3]. Bone marrow examination was reported as ALL.

Case 5
A 46-year-old female presented with complaints of low backache and generalized weakness for 8 months. Before presenting to us, she was evaluated elsewhere for above symptoms. MRI of the spine and sacroiliac joints was done to ascertain the cause of low backache, which showed bilateral sacroilitis [Figure 4]. Considering her symptoms and MRI findings, she was already started on empirical antitubercular treatment by a general practitioner. On physical examination, she was pale and had tachycardia (pulse 100/min), with no bony tenderness. Systemic examination was unremarkable. Laboratory examination revealed hemoglobin – 5.4 g/dl, total leukocyte count – 10,400/µl, and platelet count – 58,000/µl. Peripheral blood smear showed microcytic hypochromic to normocytic normochromic red blood cells with moderate anisocytosis and 39% blast cells. Erythrocyte sedimentation rate (126 mm 1st h) and CRP (62 mg/dl) were raised. Renal and liver function tests were normal. Reticulocyte count was 0.5%. Iron profile studies were normal. Chest radiograph and ultrasound of the abdomen were normal. Bone marrow aspiration was done in view of bicytopenia, which showed ALL.

Treatment
All patients were given chemotherapy which consisted of adriamycin, vincristine, and L-asparaginase. All of them showed improvement with chemotherapy and their backache decreased.
ALL is the most common hematological malignancy of childhood and accounts for about 20% of acute leukemia in adults. Bone and joint pain may be presenting complaint in 25% of childhood acute leukemia. A German multicenter trial (unpublished data) of 1273 adult ALL patients reported bony involvement either clinically or diagnosed radiologically was found in only 1.2% of patients. The incidence of adult ALL presenting exclusively as low backache could be even more rarer. In our study, all patients manifested with low backache. Surprisingly, one of them (case 5) was found to have bilateral sacroiliitis. Moghadam et al. reported the first case of sacroiliitis in 2010 as an initial presentation of ALL. To the best of our knowledge, this could be the second case of ALL manifesting as sacroiliitis.

Symptoms and clinical manifestations of adult ALL in a German multicenter trial revealed that clinical presentation of adult ALL is almost always acute and patients usually have symptoms of only a few weeks duration. However, three of five of our patients had chronic backache (>3 months). Data based on collaborative trials reported by GMALL (n = 1273), cancer and leukemia Group B (n = 197), medical research council (n = 617), and GIMEMA (n = 778) showed that lymphadenopathy, usually cervical, is present in 40%–57% of patients, palpable splenomegaly in 31%–54%, and hepatomegaly in 24%–47% of patients. Interestingly, none of our patients had organomegaly and/or lymphadenopathy at the time of diagnosis.

All patients in our series had normal leukocyte counts. A study of 938 adult ALL patients showed that mere 14% patients had normal leukocyte counts and neutrophils <500 × 10⁶/L was seen in 23% of the patients and platelet counts <25,000 × 10⁶/L in 30% of patients, corresponding roughly to the symptoms of infection and bleeding present at diagnosis.

Bone marrow aspiration and biopsy are mandatory for the diagnosis of ALL. All patients in our study had blast cells fewer than 50% on bone marrow examination. In <3% of cases, the blast cells constitute <50% of the nucleated marrow. In rest of 97% patients, blast cells constitute more than 90% of the bone marrow. Bone pain in leukemia occurs when bone marrow expands due to the accumulation of abnormal white blood cells. Thus, all patients in our study fall into above mentioned 3% category and further support the rare occurrence of bony pain in adulthood ALL.

The characteristic findings of this infrequent primary presentation of leukemia are lack of significant organomegaly or lymphadenopathy, absence of bony tenderness, normal white blood cell counts, and bone marrow involvement on MRI scan, suggesting a unique subset of adulthood ALL.

**References**

1. Gokbuget N, Hoelzer D. Adult acute lymphoblastic leukaemia. In: Wiernik PH, Goldman JM, Dutcher J, Kyle RA, editors. Neoplastic Disease of Blood. 5th ed. New York: Springer; 2013. p. 331-54.

2. Pandya NA, Meller ST, MacVicar D, Atra AA, Pinkerton CR. Vertebral compression fractures in acute lymphoblastic leukaemia and remodelling after treatment. Arch Dis Child 2001;85:492-3.

3. Moghadam A, Talebi-Taheer M, Dehghan A. Sacroiliitis as an initial presentation of acute lymphoblastic leukaemia. Acta Clin Belg 2010;65:197-9.

4. Larson RA, Dodge RK, Burns CP, Lee EJ, Stone RM, Schulman P, et al. A five-drug remission induction regimen with intensive consolidation for adults with acute lymphoblastic leukaemia: Cancer and leukemia group B study 8811. Blood 1995;85:2025-37.

5. Chessells JM, Hall E, Prentice HG, Durrant J, Bailey CC, Richards SM. The impact of age on outcome in lymphoblastic leukaemia; MRC UKALL X and XA compared: A report from the MRC paediatric and adult working parties. Leukemia 1998;12:463-73.

6. Annino L, Vegna ML, Camera A, Specchia G, Visani G, Fioritoni G, et al. Treatment of adult acute lymphoblastic leukaemia (ALL): Long-term follow-up of the GIMEMA ALL 0288 randomized study. Blood 2002;99:863-71.

7. Hoelzer D, Gokbuget N. Acute lymphocyte leukaemia in adults. In: Hoffman R, Benz EJ, Shattil SJ, Furie B, Silberstein LE, McClave P, et al., editors. Hematology: Basic Principles and Practice. 5th ed. Philadelphia: Churchill Livingstone Elsevier; 2009. p. 1033-50.