

### Isolated Vertebral Body Relapse of Acute Lymphoblastic Leukemia

**B.R. Agarwal**  
**Z.C. Curriimbhoy**

Osseous involvement in acute leukemia is common in children and occurs in about two thirds of all cases, but it is rare in adults(1). Besides the long bones, destructive and productive changes may develop in the spinal column in leukemia(2). Vertebral involvement as a prime manifestation of leukemia has been described in 3 cases earlier by Nadkarni *et.al.*(3). We describe an unusual isolated vertebral body relapse in a child with acute lymphoblastic leukemia (ALL), who was in complete remission and off therapy for 3 months.

---

*From the Department of Pediatric Hematology and Oncology, B.J. Wadia Hospital for Children, Institute of Child Health and Research Centre, Parel, Bombay 400 012.*

*Reprint requests: Dr. Bharat R. Agarwal, Consultant Pediatric Hematologist and Oncologist, 63, Gandhi Nagar, Bandra (East), Bombay 400 051.*

*Received for publication: March 18, 1993;*

*Accepted: October 3, 1993*

### Case Report

An 8-year-male was diagnosed to have low risk ALL in February 1987, but after remission induction with 3 drugs (vincristine, prednisolone, L-asparaginase and intrathecal triple therapy) he was lost to follow up. He was detected to have relapse of ALL (L<sub>2</sub> morphology) in the bone marrow in September 1987. He was treated for 3 years till September 1990 with intensive chemotherapy protocol CCSG-106-Regimen A(4) for relapsed ALL at our centre. In addition he received a prophylactic course of cranial radiotherapy (1800 rads). Three months after completion of chemotherapy he presented with backache and unstable gait of recent onset. On examination the spine movements were painful and restricted. Neurologically he had increased tone, brisk jerks and extensor planters in both lower limbs. Superficial and deep sensations below D<sub>12</sub> level were impaired. Testes appeared normal in size clinically. The spinal X-ray revealed a collapse of D<sub>8</sub> vertebral body (*Fig. 1*). CT findings in the dorso-lumbar spine performed with intrathecal injection of water soluble contrast medium showed destruction of D<sub>8</sub>-D<sub>9</sub> intervertebral disc, body of D<sub>8</sub> vertebra and D<sub>7</sub>-D<sub>8</sub> intervertebral disc (*Fig. 2*). There was also a paraspinal soft tissue mass extending into the bony spinal canal in the extradural region at D<sub>7</sub>-D<sub>9</sub> vertebral level compressing the spinal cord concentrically at that level. Due to the worsening paraplegia he was taken up for emergency decompression of the spinal cord by the orthopedist. A vertebrectomy of D<sub>8</sub> vertebra was performed and the spinal cord decompression achieved. The scrapings from D<sub>8</sub> granulation tissue showed dense infiltration by round cells consistent

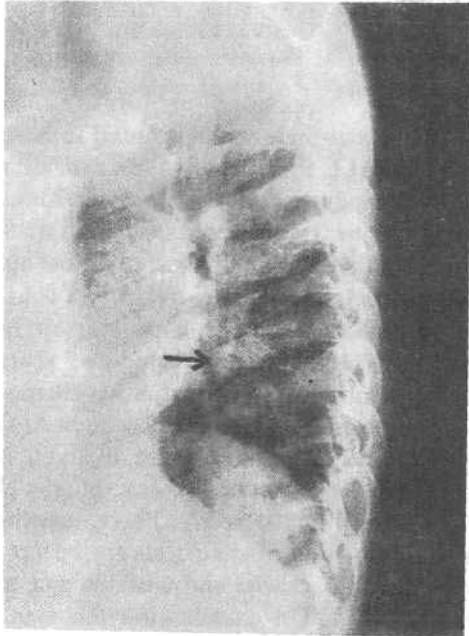


Fig. 1. X-ray of the dorsolumbar spine showing collapse of D<sub>8</sub> vertebral body.

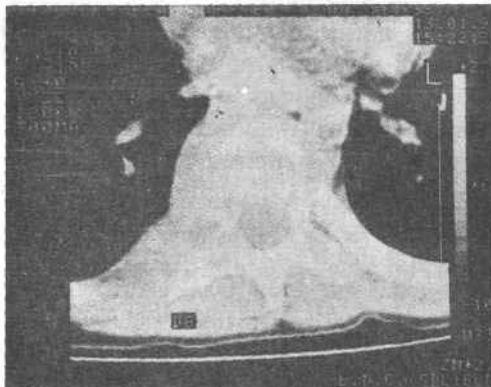


Fig. 2. CT Scan of the dorsolumbar spine showing destruction of the body of D<sub>8</sub> vertebra and spinal cord compression.

with a diagnosis of isolated vertebral body second relapse of ALL. His CSF and bone

marrow were negative for blasts. He received reinduction chemotherapy for relapsed ALL but the child died on the 7th day of sepsis.

### Discussion

Extramedullary spread is a common feature in ALL(4). The most common sites of extramedullary spread are the CNS, testes, liver, kidneys and spleen(5). Isolated, localized relapse at unusual locations like ovary(6), lungs(7),breast(8), eye(9), kidneys and bone have been reported(10). Isolated vertebral body relapse has not been reported earlier.

Compressive myelopathy is an uncommon presenting feature of acute leukemia especially in children. Among patients with documented meningeal involvement only 5-10% develop detectable spinal cord disease(11). Peterson could find only ten cases of spinal cord involvement in acute leukemics in the first decade of life; most commonly in acute myeloid leukemias(12). The commonest pathology in these cases was an extradural leukemic infiltration. The commonest site of spinal involvement is at thoracic level, followed by lumbar and sacral level. Backache and leg pains precede paralysis in two third of the cases by about 3-4 weeks, as noted in our case. However, vertebral collapse or fractures are unusual, occurring in 1-3% of patients(13).

Appropriate treatment should include local measures for disease control and intensification of systemic chemotherapy, as for any unusual isolated extramedullary relapse. The slightly changing relapse pattern may reflect the selection of biologically more benign ALL cells in these patients after more intensive therapy. Alternatively, biphenotypic or biclonal acute leukemias may present with or relapse at extra-

medullary sites with overt clinical manifestations(14).

#### Acknowledgement

The authors wish to thank the Dean, BJ. Wadia Hospital for Children, Bombay, for permitting us to publish this case.

#### REFERENCES

1. Rogalsky RJ, Black B, Reed MH. Orthopedic manifestation of leukemia in children. *J Bone Joint Surg* 1986, 68: 494-501.
2. Cohn SL, Morgan ER, Mallette LE. The spectrum of metabolic bone disease in lymphoblastic leukemia. *Cancer* 1987, 59: 346-350.
3. Nadkarni KS, Advani SH, Dinshaw KA, *et al.* Vertebral involvement in childhood acute lymphoblastic leukemia. *Indian J Pediatr* 1984, 51: 103-107.
4. Baum E, Nachman J, Ramasay N, *et al.* Prolonged second remission in childhood acute lymphoblastic leukemia: A report from the children's cancer study group. *Med Pediatr Oncol* 1983, 11: 1-7.
5. Rao AV, Verma K, Kapila K, Choudhary VP, Pati HP. Extramedullary involvement in acute lymphoblastic leukemia and its relation to therapy. *Indian J Pediatr* 1991, 58: 535-551.
6. Bunin NJ, Pui C-H, Hustu O, Rivera GK. Unusual extramedullary relapses in children with acute lymphoblastic leukemia. *J Pediatr* 1986, 109: 665-668.
7. Georigitis J, Eiger H, Provisor D, Baehner RL. Isolated pulmonary leukemic relapse following successful bone marrow transplant in a child with acute lymphoblastic leukemia. *Pediatrics* 1979, 64: 913-917.
8. Conter V, D'Angelo P, Rovelli A, *et al.* Isolated breast relapse after allogenic bone marrow transplantation for childhood ALL. *Med Pediatr Oncol* 1992, 20: 165-168.
9. Jankovic M, Masera G, Uderzo C, *et al.* Recurrences of isolated leukemic hypopyon in a child with acute lymphoblastic leukemia. *Cancer* 1986, 57: 380-384.
10. Riehm H, Ebell W, Feickert HJ, Reiter A. Acute lymphoblastic leukemia. *In: Cancer in Children - Clinical Management*, 3rd edn. Eds Voute PA, Barrett A, Lemerle J. Berlin, Springer-Verlag, 1992, pp 85-106.
11. Shenoy A, Khajuria R, Malik N, Singhi S. Acute paraplegia as a presenting symptom of acute leukemia. *Indian Pediatr* 1988, 25:569-571.
12. Peterson SR, Boggs DR. Spinal cord involvement in leukemia. *Cancer* 1981,47: 346-350.
13. Vasilopoulou-Sellin R, Ramirez I. Severe osteopenia and vertebral compression fractures after complete remission in an adolescent with acute leukemia. *Am J Hematol* 1992, 39: 142-143.
14. Bayle C, Romdhane NB, Bastard C, *et al.* Acute leukemia with extramedullary presentation and mixed myeloid and lymphoid expression. *Pediatr Hematol Oncol* 1986, 3: 293-296.