Letter to the Editor

Cardiac tamponade as a symptom of the blast crisis of chronic myeloid leukemia

Dear Editor

We report the clinical findings of a study on a 29-year-old woman diagnosed with chronic myeloid leukemia (CML) blast crisis with an initial presentation of cardiac tamponade. She first visited our hospital because of dyspnea experienced for 1 month. Other associated symptoms were abdominal fullness and bilateral lower leg pitting edema. She denied having any underlying disease. At the time of admission, her blood pressure was 82/50 mmHg and pulse rate was 120/min, with a marked paradoxical pulse. Initial laboratory findings revealed a white blood cell count of \( 614 \times 10^3/\mu L \), hemoglobin level of 4.6 g/dL, and platelet counts of 198,000/\( \mu L \). The differential blood count showed 45% blasts, 10% promyelocytes, 4% myelocytes, 1% basophils, and 1% eosinophils, with normocytic normochromic erythrocytes (Figure 1B). Renal and liver functions were normal. An abdominal computed tomography scan revealed massive splenomegaly (Figure 1A), and bone marrow examination revealed hypercellularity, with a myeloid/erythroid ratio of 13:1 and 65% blasts. Moreover, the Philadelphia chromosome was observed in all analyzed metaphases, and polymerase chain reaction revealed a bcr-abl rearrangement on \( P210 \) (\( b3a2 \)). Flow cytometry revealed 96% CD33, 93% CD13, and an aberrant expression of CD7 and CD15. The diagnosis was Philadelphia-positive CML in blast crisis.

The causes of pericardial effusion may be associated with leukemic cell infiltration, extramedullary hematopoiesis, infection, and bleeding in patients with CML. In our case, the mechanism of cardiac tamponade was leukemic cell infiltration (Figure 1D). The National Comprehensive Cancer Network guideline for treatment with CML blast crisis includes induction chemotherapy with a tyrosine kinase inhibitor (TKI) followed by hematopoietic cell transplantation (HCT) or TKI followed by HCT. In our article, the treatment was hydroxyurea, normal saline hydration (2500 mL/d), low-dose cytarabine (20 mg/m^2/d) for 5 days, and TKI (dasatinib; 100 mg/d). Two years later, we checked the molecular response of BCR-ABL which revealed 3.2 log reduction (a major molecular response). We will arrange hematopoietic cell transplantation in the future. The outcome of cardiac tamponade as the initial presentation in CML blast crisis cited in the literature [2–5] was invariably fatal. Because in previous cases treatment was just with...
hydroxyurea and pericardiocentesis, there was no treat-
ment with TKI or HCT.

References

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clinical manifestation of extramedullary blast crisis in chronic

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Figure 1.  (A) An abdominal computed tomography scan revealed massive splenomegaly (arrow). (B) Initial laboratory findings revealed a white blood cell count of 614 × 10^3/μL with 45% blasts (arrow; original magnification, 1000×). (C) Echocardiography showed a massive pericardial effusion with cardiac tamponade (arrow). (D) Pericardial fluid cytology revealed leukemic cell infiltration (arrow; original magnification, 400×).