Catastrophic thromboembolism in a patient with acute lymphoblastic leukemia and hypereosinophilia

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A 20-year-old man was diagnosed with precursor B-cell acute lymphoblastic leukemia (ALL) associated with hypereosinophilia. His peripheral blood showed a total white count of 30.5×10⁹/L with 49% blasts and 35% eosinophils. While receiving induction chemotherapy consisting of daunorubicin, vincristine, prednisone, and L-asparaginase, the patient developed multiple upper extremity deep venous thrombi (DVTs). Despite heparin anticoagulation and discontinuation of L-asparaginase, progressive DVTs involving both common femoral veins occurred. Due to the concurrent development of anasarca, a transthoracic echocardiogram was performed. It revealed multiple intraventricular masses consistent with thrombi (Figure 1). He then experienced left upper quadrant pain and numbness of the right lower extremity. A subsequent computed tomographic scan of the chest, abdomen, and pelvis demonstrated stable ventricular thrombi (Figure 2), a new large splenic infarct (Figure 3), and a new embolus at the aortic bifurcation (Figure 4). Once the patient developed acute shortness of breath from a pulmonary embolus, an emergent biventricular embolectomy was successfully performed.

Hypereosinophilia in the setting of ALL is rare. The patient described here demonstrates that cardiac and peripheral vascular thrombi can occur in this condition. Previous case studies involving patients with ALL with associated eosinophilia showed increased morbidity, specifically heart disease, compared to patients with only ALL. It is also possible the L-asparaginase played a synergistic role in the development of this patient's multiple thromboemboli. Our case suggests that L-asparaginase be used cautiously when hypereosinophilia is present in the setting of ALL. If L-asparaginase is to be used, aggressive prophylactic anticoagulation should be considered.

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References

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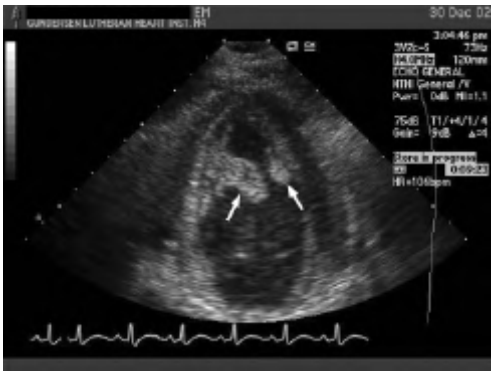

Figure 1. Transthoracic echocardiogram demonstrating multiple left ventricular thrombi.

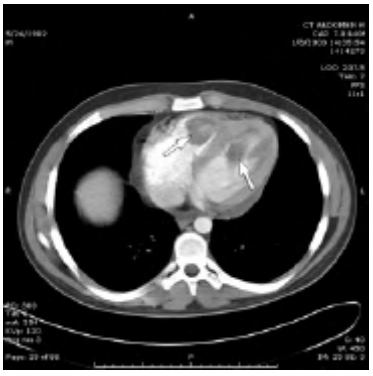

Figure 2. Computed tomographic scan demonstrating biventricular thrombi.

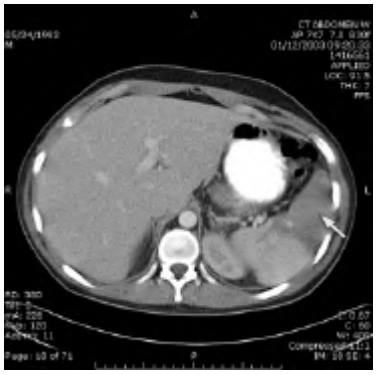

Figure 3. Computed tomographic scan demonstrating a large splenic infarct.

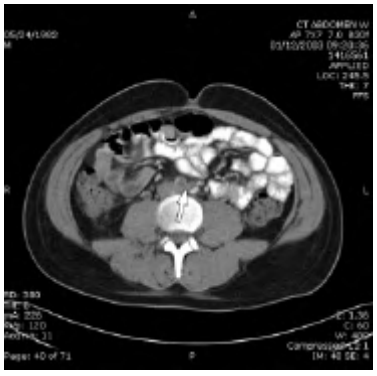

Figure 4. Computed tomographic scan demonstrating an embolus at the aortic bifurcation.