Urothelial Carcinoma Mimicking as Chronic Myelogenous Leukemia

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The patient was a 54-year-old woman with no significant past medical history who presented with a 2-week history of abdominal pain described as a constant dull ache in the left upper quadrant. The pain radiated to the left flank region. Family history was significant for a father with "kidney cancer" diagnosed at age 72. Review of systems was significant for a 10-lb weight loss over the previous month. Physical examination revealed a large mass in the left upper quadrant that initially was thought to be an enlarged spleen. Laboratory examination revealed a large mass in the left upper quadrant that initially was thought to be an enlarged spleen. Physical examination revealed a white blood cell (WBC) count of 21 000/mm³ with 73% granulocytes, hemoglobin of 8.9 g/dL, and platelets of 1 158 000/mm³. The preliminary diagnosis was chronic myelogenous leukemia (CML). However, computed tomography (CT) of the patient's abdomen revealed that the mass felt in the left upper quadrant was in fact an enlarged left kidney with severe hydronephrosis (Figure).

DISCUSSION

This patient initially was thought to have a classic presentation for CML with an enlarged spleen, leukocytosis, and thrombocytosis. However, a CT scan of the abdomen revealed an enlarged kidney with hydronephrosis and an obstructing 3 cm × 3 cm periaortic lesion. A biopsy was performed, which showed urothelial carcinoma. Although other cases of leukemoid reaction in response to a urothelial cancer have been reported,1,2 we could find no other case that mentions such a close mimic to CML.

Leukemoid reaction was first described by Krumbhaar in 1926 and a case series by Hill and Duncan followed in 1941.4 It is defined as a benign elevation in WBC count that generally exceeds 20 000/mm³ and not uncommonly exceeds 50 000/mm³. It commonly is associated with an underlying malignancy, especially carcinoma of the lung, gastrointestinal tract, and breast.5 Leukemoid reaction in association with urologic cancers is considered a paraneoplastic syndrome.2

Leukemoid reaction can mimic CML, a myeloproliferative disorder, although there are several notable differences. Leukemoid reaction is considered a benign process in that it does not cause hyperviscosity from leukostasis. The granulocytosis that does occur does not resemble leukemia because the cells are mature neutrophils. However, coexistence with leukemia is possible and can confuse the picture.6 The leukemoid reaction is differentiated from CML by an increased neutrophilic alkaline phosphatase score, absent Philadelphia chromosome, and lack of splenomegaly.

In our case, the enlarged hydronephrotic kidney on the left was first thought to be splenomegaly, thereby making CML a consideration based on clinical presentation. Another confounding factor in our patient was the marked thrombocytosis. Although thrombocytosis is a frequent finding in patients with malignancies, it also can occur in CML as part of the myeloproliferative process.7,8

One proposed mechanism for the leukemoid reaction is the autonomous production of granulocyte-macrophage colony stimulating factor in the cancer tissue.9 The leukemoid reaction is a rare paraneoplastic syndrome that can even precede the diagnosis of cancer by years.10 The proposed mechanism for the thrombocytosis in malignancy is thought to be a tumor-derived factor with thrombopoietin-like activity.7

The patient had shown evidence of metastatic disease at the time of her presentation in April 2004, as a CT scan of her abdomen showed multiple large periaortic, periceliac, and retroperitoneal lymph nodes. A biopsy specimen from the left periaortic lymph node was positive for moderately differentiated urothelial papillary carcinoma. She was treated with 8 cycles of gemcitabine and cisplatin.11 In October
Figure. Computed Tomography Scan of the Abdomen Showing Severe Hydronephrosis of the Left Kidney

2004 a CT of the abdomen showed some decrease in periaortic lymphadenopathy. The patient was referred to the urology department for surgical management of her hydronephrosis. She underwent a left nephrectomy and left ureterectomy and periaortic lymph node dissection. She had pathologically noninvasive low-grade papillary transitional cell cancer that involved the entire renal pelvis, extending to the proximal ureter. The patient is still followed in the oncology clinic and a recent CT on June 6 of this year was negative for any metastasis.

CONCLUSION

Leukemoid reaction is a rare paraneoplastic syndrome that can mimic CML as a result of its very similar laboratory presentation. The leukemoid reaction differs from CML by an increased neutrophilic alkaline phosphatase score, absent Philadelphia chromosome, and lack of splenomegaly. Thrombocytosis may be a separate hematologic manifestation of malignancy.

References