ACUTE LYMPHOBLASTIC LEUKEMIA IN RELAPSE PRESENTING AS A BREAST LUMP: A CASE REPORT

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SUMMARY

A 26-year-old assistant nurse suffered from acute lymphoblastic leukemia and was successfully treated with combination chemotherapy. 15 months later, she relapsed with a lump in her right breast. The significance of this finding is discussed.

INTRODUCTION

Acute leukemia presenting as a breast lump is unusual. The first case was reported in 1912 by McWilliams and Hanes. A 33-year-old woman had a right breast mass composed of large lymphoid cells. Five months later, she developed a left breast mass and 90% of the white cells in the peripheral blood were large lymphoid cells.

In this report, a patient with acute lymphoblastic leukemia in relapse presenting as a lump in her right breast is described.

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CASE REPORT

A 26-year-old assistant nurse was referred from the Sungei Buloh District Hospital for investigation of anaemia in December 1980. On admission, she had marked pallor and hepatosplenomegaly. Her peripheral blood showed pancytopenia with 80% of white cells being blast cells. These blast cells were rather homogeneous in size and shape, with single poorly-defined nucleolus. Cytochemical study showed that these blast cells were negative for peroxidase, non-specific esterases and acid phosphatase. They were however strongly positive for periodic-acid-Schiff reagent. Bone marrow aspirate revealed that 95% of nucleated cells were blast cells. She was diagnosed to have acute lymphoblastic leukemia.

She was treated with prednisolone (40 mg/m^2 orally per day for two weeks) and vincristine (1.4 mg/m^2 intravenously on days 1, 8 and 15). She went into complete remission within a month of starting chemotherapy.

Next, she received six courses of consolidation therapy with COAP (Cyclophosphamide 100 mg/m^2 orally days 1–5, Vincristine 2 mg intravenously day 1, Cytosine arabinoside 100 mg/m^2 intravenously days 1–5, Prednisolone (100 mg/m^2, orally daily day 1–5) every fortnightly. Meanwhile, she was given central nervous system prophylaxis consisting of cranial irradiation (2400 rads over three weeks) and six

intrathecal injections of methotraxate (10 mg per injection over three weeks). Then she was put on maintenance therapy comprising intermittent five-day courses of 6-mercaptopurine (100 mg/m^2 orally days 1–5) and cyclophosphamide (200 mg/m^2 orally days 1–5) once every three weeks. Retreatment with vincristine and prednisolone was conducted once every three months.

She had partial loss of scalp hair after cranial irradiation. Complete regrowth of hair occurred within three months. She experienced transient and mild sensory polyneuropathy following intravenous vincristine therapy. Transient nausea and vomiting following cytotoxic treatment was partially controlled by anti-emetics.

Follow-up bone marrow aspirations done in 1981 showed that she remained in complete remission. Clinically, she was well and continued working as an assistant nurse.

In April 1982, she complained of a lump in her right breast. Examination revealed hepatosplenomegaly, an enlarged right axillary lymph node and a solid mass in the upper outer quadrant of her right breast. Peripheral blood showed pancytopenia with leucoerythroblastic changes, *i.e.*, presence of granulocytic and erythrocytic precursor cells in the peripheral blood. Bone marrow aspirate was 'dry' and trephine biopsy revealed replacement of the bone marrow by blast cells. An excision biopsy of the breast lump was performed. Microscopic examination revealed periductal blast-cell infiltrate with preservation of ductular epithelium. The nature of the blast cells was similar to those found in the bone marrow.

She was retreated with vincristine (1.4 mg/m^2 intravenously on days 1, 8 and 15), adriamycin (20 mg/m^2 intravenously day 1), and prednisolone (40 mg/m^2 orally daily on days 1–14). Enlarged right axillary lymph node disappeared. Her enlarged liver and spleen shrank. However, she never achieved a second complete remission. She continued to receive three-weekly courses of combination chemotherapy (6-thiaguanine 100 mg/m^2 orally days 1–5, cytosine arabinoside 100 mg/m^2 intravenously days 1–5, and daunorubicin 40 mg/m^2 intravenously on day 1). Unfortunately she died of septicemia four months later. Permission for postmortem was not granted.

DISCUSSION

Viadana[1] in an autopsy study of 4728 cases of human leukemias showed that leukemias rarely metastasize to the breast. Acute lymphoblastic leukemia had the lowest seeding frequency. Reported cases[2] had been due to acute myeloid leukemia rather than acute lymphoblastic leukemia. This may reflect the fact that the incidence of adult acute myeloid leukemia is higher than that of adult acute lymphoblastic leukemia.

Most of the reported cases are females in the reproductive age. Gralnick and Dittmar[3] had speculated that the target organ effect of estrogen might induce or accelerate breast infiltration by leukemic cells. This cannot be the sole reason as the majority of the female patients with leukemias do not develop clinically apparent breast lesions. There are no data available to correlate breast involvement and contraceptive pills used to suppress menstrual flow during treatment. Our patient had normal menstrual functions and never received contraceptive pills before and during therapy.

Breast involvement in acute leukemia is not an isolated phenomenon but part of the systemic disease. It may antedate, occur with or follow bone marrow disease. Emergence of breast lumps during maintenance treatment may indicate appearance of resistant leukemic clone as our case suggests.

In our case, an excision biopsy established the definitive diagnosis of the breast lump which mimicked a primary neoplasm of the breast. Wrong diagnoses have been made especially in cases where the breast mass antedated expression of leukemia. Therefore, the possibility of an acute leukemia should always be included in the differential diagnosis of a breast mass in a female of the reproductive age.

REFERENCES

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3 Gralnick H R, Dittmar K. Development of myeloblastoma with massive breast and ovarian involvement during remission in acute leukemia. *Cancer* 1969;21:746-749.