Journal of Korean Medical Science
Vol. 5, No. 2 97-99 June 1990

Abdominal Burkitt's Lymphoma Diagnosed by Fine Needle Aspiration Cytology

— A Case Report —

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A case of abdominal Burkitt's lymphoma diagnosed through aspiration cytology is described. This 9-year-old boy presented with abdominal pain and distention for three months accompanied by fever and night sweat during the last month. An abdominal sonography and CT scan showed hepatosplenomegaly and an intrahepatic mass with celiac lymphnode enlargement, ascites, and pleural fluid. A peripheral blood smear showed a few blast cells. Aspiration of the abdominal mass revealed very cellular aspirates consisting of diffusely scattered small monotonous round cells. The cells had little cytoplasm, along with round nuclei that showed clear-cut nuclear membrane, coarse chromatin pattern, and multiple small prominent nucleoli. Differential diagnoses considered were small round cell sarcomas such as malignant lymphoma, neuroblastoma, Ewing's sarcoma, and rhabdomyosarcoma. Of these, malignant lymphoma of the small noncleaved cell type was most consistent with the results of several studies including immunohistochemical staining, peripheral blood smear, and bone marrow biopsy. The cells were positive for leukocyte common antigen (LCA) and showed finely vacuolated basophilic cytoplasm in both the peripheral blood smear and bone marrow biopsy, characteristic of Burkitt's lymphoma cells.

Key Words: *Burkitt's lymphoma, Abdominal, Aspiration cytology*

INTRODUCTION

Burkitt's tumor is a clinico-pathologic entity, and the distinctive cytologic and histochemical features must be associated with typical clinical presentation before making a definite diagnosis. Since peripheral nodal involvement in Burkitt's tumor is rare and the tumor frequently presents with abdominal masses and effusions, a cytologic preparation may be the inital diagnostic procedure (Banks et al., 1975). A combination of air-dried smears, cytologic preparations, cell blocks, and histochemical stains often results in an unequivocal cytologic diagnosis of Burkitt's tumor. Fine needle aspiration as a cytologic preparation is known to provide a quick diagnosis without the need of a surgical procedure to obtain tissue (Billingham et al., 1975). This presentation details the cytologic features in a case of abdominal Burkitt's lymphoma diagnosed by fine needle aspiration cytology.

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MATERIALS AND METHODS

Aspiration was performed on the abdominal mass using a 21-gauge needle attached to a disposable 20ml plastic syringe. The obtained samples were smeared on glass slides and immediately soaked in 95% ethyl alcohol. Some of the samples were fixed in 10% formalin for cell block. The smear specimen was stained with Papanicolaou method, and the cell block was stained using various immunohistochemical markers.

Case presentation

A 9-year-old boy visited the hospital because of malaise, anorexia, and progressive abdominal distention for three months. He also presented with fever and night sweat during one month before the visit. Abdominal sonography and CT were performed and showed a huge mass in the abdomen consisting of hepatosplenomegaly, an intrahepatic mass, and multiple enlargement of celiac lymphnodes with pleural effusion and ascites. Peripheral blood was counted as Hb 8.8, WBC 12,800, and Platelet 292,000 and showed a few blast cells on the smear. Bone marrow aspiration and biopsy and fine needle aspiration from the abdominal mass were done for the diagnosis, which was initinally considered as a small round cell tumor, most likely malignant lymphoma. Although he received chemotherapeutic treatment for a few months, he died about one year later from the onset of the disease.

Cytopathologic findings

The aspirates from the abdominal mass were very cellular and consisted of diffusely scattered small round cells. The cells were uniform in size and shape, and their cytoplasm was scanty in amount and amphophilic with Papanicolaou stain (Fig. 1). The nuclei had evenly

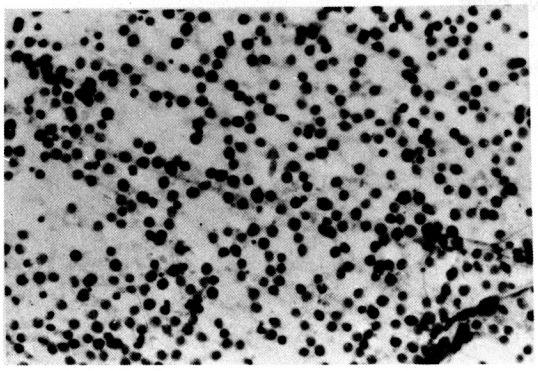

Fig. 1. Cellular aspirates show small round cells relatively uniform in size and shape (Papanicolaou, ×100).

distributed chromatin and prominent nuclear membranes, often showing multiple small nucleoli (Fig 2). Not infrequently, the neoplastic cells were interspersed with scattered pyknotic cells and nuclear debris and sometimes macrophages. Nuclear or cytoplasmic vacuolation was not found. The bone marrow study revealed hypercellular marrow packed with the same lymphoma cells and cryptococcosis. Im-

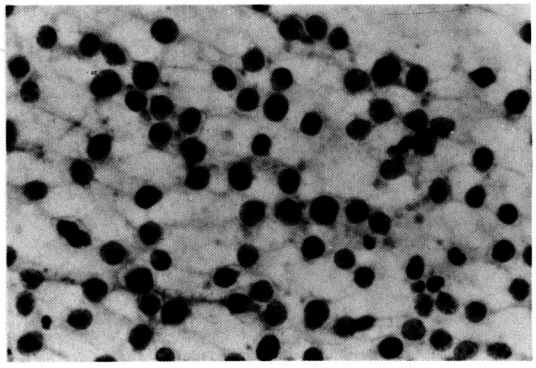

Fig. 2. Small non-cleaved nuclei have vesicular chromatin and multiple small nucleoli (Papanicolaou, ×200).

munocytochemical stainings, such as leukocyte common antigen (LCA), pan-B marker, desmin, neuron specific enolase (NSE), and vimentin, were performed using a cell block, and the tumor cells were negative for all but LCA. PAS-positive granules were clearly observed in non-neoplastic macrophages but not in lymphoma cells.

DISCUSSION

Burkitt's lymphoma was described in India as early as 1967. The frequency of Burkitt's lymphoma is stated up to 14.3% among the non-Hodgkin's lymphoma in a study using routine FNAC in diagnosing lymphoreticular malignancies (Billingham et al., 1975). Clinically, involvement of abdominal viscera, a common presenting feature in Burkitt's lymphoma, was found from 48.5% to 76.7% by several groups (Billingham et al., 1975). Bone marrow involvement, seen in our case, is conspicuously rare and invariably consists of massive infiltration recognizable in smear (Kline, 1988; Wright et al., 1971). The cytologic method is especially valuable in the preliminary diagnosis of lymphoproliferative disorders and provides several advantages. It 1) reduces artifactual distortion, 2) enhances cellular detail, 3) allows examination of a larger surface of the tissue, and 4) provides a more rapid methodology, with stained slides available in two minutes. The diagnosis of Burkitt's lymphoma almost entirely depends on individual cell morphology in smears, which can be considerably altered and distorted by fixation and sectioning artifacts. The starry-sky appearance, a reliable diagnostic feature in paraffin-embedded sections, is more marked than in other malignant lymphomas but not specific, and it becomes less obvious when there is delayed or in-

adequate fixation, leading to separation of lymphocytes or collapse of macrophages (Billingham et al., 1975; Das et al., 1987). The cytodiagnosis of Burkitt's lymphoma usually depends upon two important characteristics of neoplastic lymphoid cells: the small non-cleaved nuclei and the cytoplasmic vacuolations. The majority of the cells in this case were of the small cell non-cleaved type but not vacuolized. Various non-lymphoid malignancies were also considered in our case, which may be confused with Burkitt's tumor. They were small round cell tumors, such as neuroblastoma, Ewing's sarcoma, and rhabdomyosarcoma. However, they were less likely because their cells showed pleomorphism in the latter two, and respectively special cytomorphologic features such as pseudorosettes, sheets, and rhabdomyoblasts (Ziegler, 1981). This case showed scattered uniform cells without any organoid pattern and immunohistochemical results indicating lymphoid origin.

Cytologic diagnosis of Burkitt's lymphoma should not be based on only a single parameter, such as cytoplasmic vacuolations or non-cleaved nuclei alone. The type of cells, including their cytoplasmic and nuclear characteristics, the size of the cells and their arrangement in the smear should be taken into account. If needed, the results of cytochemical and immunologic tests should also be taken into consideration when arriving at a final diagnosis (Billingham et al., 1975).

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