# *Pediatric Hodgkin's Disease in Egypt*

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**A consecutive group of 242 children with Hodgkin's disease attending the National Cancer Institute, Cairo during the years 1975–1980 were studied. Males predominated representing 76.85% of cases. Age distribution was similar to other African countries with an earlier presentation than the US. The most common histopathologic types was the mixed cellularity 60.74% of patients. Late Stages III and IV represented 63.22%, with a high tumor burden. Celiotomy in 154 cases detected more tissue involvement than clinical assessment. Its results coincided with lymphography in 68% of the cases. It showed 7 cases with schistosomal hepatic fibrosis. As schistosomal infestation is still prevalent in rural areas of Egypt, celiotomy seems mandatory in the cases studied to accomplish proper staging.**

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THE CLINICOPATHOLOGIC and epidemiologic characteristics of Hodgkin's disease (HD), and non-Hodgkin's lymphoma (NHL) are known to be subject to geographical variations.[1-3] In Egypt, the incidence of malignant lymphoma varies between 7.7% to 11.0% according to the registries of the various cancer centers.[4] There is no national cancer registry in Egypt. At the National Cancer Institute, Cairo, where the majority of cancer patients are treated, malignant lymphoma constitute 7.7%.[5] About one third, 30% of these cases, are children below the age of 18 years.[5] The present report gives clinicopathologic features of Hodgkin's disease in a large series of Egyptian pediatric patients. The findings are compared with similar reports from other countries.

## Material

In this report, a consecutive group of 242 children with HD were histologically classified according to the Rye's modification of the histologic classification of Lukes and Butler.[6] All cases were staged by Ann Arbor classification.[7] All patients were treated at the National Cancer Institute, Cairo, during the years 1975 to 1980. About 43% of patients came from the Metropolitan Cairo area, 41% from the Nile Delta, 14% from Upper Egypt, and 2% from the Canal zone; a distribution which approximates that of the population.

## Results

As regards incidence, an average of 40 new children with HD, and 15 with NHL entered the National Cancer Institute, Cairo, per year. There is no peak season for the diagnosis of these diseases. However, during the coldest quarter January–March, only 16% of the cases were diagnosed compared to 26%, 29%, and 29% in the subsequent respective quarters.

In studying age distribution among 242 cases, 46.23% were younger than age 10 years, with a peak age at 5 to 9 years (Table 1). Male predominance was noted, with 76.85% of patients were boys (Table 2).

TABLE 1. Age Distribution of Pediatric HD in Different Countries (%)

| Age | Egypt | East Africa[10] | Manchester[10] | US[2] |
|---|---|---|---|---|
| 0–4 | 7.82 | 8.0 | 11.3 | 5.8 |
| 5–9 | 38.43 | 33.0 | 26.4 | 25.0 |
| 10–14 | 33–25 | 59.0 | 62.3 | 69.2 |
| 15–18 | 20.50 | | | |

TABLE 2. Sex Distribution in Pediatric HD

| | No. | % |
|---|---|---|
| Males | 186 | 76.85 |
| Females | 56 | 23.15 |
| Total | 242 | 100.0 |

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TABLE 3. Comparative Histology of Pediatric HD in Various Geographic Areas

| Histology | Egypt* | Egypt[16] | Uganda[14] | East Africa[10] | France[17] | Texas[18] |
|---|---|---|---|---|---|---|
| No. of patients | 242 | 65 | 48 | 133 | 56 | 53 |
| Lymphocyte predominant | 13.6 | 13 | 10.4 | 19.5 | 21.5 | 10.7 |
| Nodular sclerosing | 13.6 | 21 | 20.8 | 10.5 | 12.5 | 41.1 |
| Mixed cellularity | 60.7 | 58 | 41.7 | 32 | 53.5 | 35.7 |
| Lymphocyte depleted | 3.7 | 8 | 27.1 | 38 | 12.5 | 12.5 |
| Unclassified | 8.4 | — | — | — | — | — |

* Current series, 1981.

*Histologic Findings*

The most common histopathologic type of HD was the mixed cellularity (MC) representing 60.74% of cases (Table 3). The nodular sclerosis type (NS) was uncommon in our patients, 13.6%. There was a group of patients, 8.4%, designated as unclassified HD where the exact subtype could not be reached, they were histologically diagnosed outside the Institute.

*Symptoms*

In Egypt, an enlarged lymph node is usually considered to be tuberculous until proven otherwise, and most patients from rural areas are initially treated as such. Only when there is no response to the antituberculous therapy will patients arrive at a major treatment center. The interval between the onset of symptoms and the establishment of histologic diagnosis is usually long, about 6 months on the average. Traditional symptoms such as weight loss, fever, and sweating were encountered in nearly 50% of the patients, 51.4%. Fever with temperature of 38°C or more was the most frequent symptom (45%), followed by weight loss (34.8%), and sweating (20.2%).

TABLE 4. Tumor Involvement in Pediatric HD

| Site | Percentage |
|---|---|
| Nodes | 100 |
| Spleen | 62 |
| Liver | 23 |
| Mediastinum | 2.6 |
| Lung | 2.0 |
| Skeleton | 2.0 |
| Abdominal mass | 3.5 |
| Ascites | 0.4 |
| CNS | 2.0 |
| Breast | 0.4 |
| Nasopharynx | 1.4 |

TABLE 5. Clinical and Pathologic Staging in Pediatric HD

| | | Pathologic stage | | | | |
|---|---|---|---|---|---|---|
| Clinical stage | No. patients | I | II | III | IV | ND |
| I | 46 | 18 | — | 15 | — | 13 |
| II | 58 | 1 | 27 | 15 | 3 | 12 |
| III | 58 | 7 | 6 | 34 | 1 | 10 |
| IV | 80 | 2 | 3 | 20 | 2 | 53 |
| Total | 242 | 28 | 36 | 84 | 6 | 88 |

ND: not done.

*Tumor Involvement*

Huge enlargement of cervical lymph nodes is seen at the time of diagnosis in one-third of the cases. Clearly these nodes were the first to be involved in most patients. Nodal involvement showed a progressive decrease in incidence from the supraclavicular to the axillary ones, and then inguinal nodes. As regards mediastinal involvement, it was encountered in 26.1%; the majority of which (70%) belonged to the LD type. Involvement other than peripheral nodes was encountered in 12% of the children (Table 4).

The question of hepatosplenomegaly and whether it is due to lymphomatous involvement or the result of schistosomiasis is often raised in Egypt. In the current study, a positive history for schistosomal infection was obtained in 30% of children. Histologically documented schistosomal hepatic fibrosis was detected in 7 of 27 cases subjected to celiotomy. These children did not respond differently to therapy than those without a positive schistosomal history.

*Staging*

The clinical staging was based upon clinical examination, laboratory, and radiological findings. Bipedal lymphangiography was performed in 106 cases, and celiotomy in 154 cases. Stages I and II included 41 and 48 patients, respectively, both representing 36.78% of all cases. Of these, 28 in stage I and 36 of Stage II were pathologically confirmed by celiotomy (Table 5). By correlating clinical and pathologic staging, the most striking feature was the clinical understaging. There was pathologic evidence of splenic involvement in 15 cases of clinical Stage I, and 15 cases of clinical Stage II. Moreover, hepatic and splenic involvement were pathologically detected in three of the clinical Stage II cases (Table 5). Thus understaging was detected in 33/78 cases (24.3%). Overstaging was detected in one child only.

As regards Stage III cases, they were 94, the majority: 84 were pathologically confirmed by celiotomy (Table

5). Stage IV comprised 59 cases. There was lung involvement in 5, and skeletal involvement in 4 patients. Percutaneous liver biopsy and bone marrow aspiration were negative in all cases. Celiotomy ws done in 27 cases, it showed hepatic involvement with HD in 2 cases, and schistosomal hepatic fibrosis in 7.

Overstaging in both Stages III and IV was detected in 38/72 cases, a rate of 52.77%. Both Stages III and IV represented 63.22% of all the studied cases.

There was no morbidity or mortality from celiotomy. Bipedal lymphangiography was done in 106 cases and was unsuccessful in 3 of them. Both celiotomy and lymphangiography were done in 100 cases. Results were coinciding in 68 cases, while false-negative and false-positive results were encountered in 16 cases and 16 cases, respectively. This denoted lymphography failure in about one third of the cases.

*Laboratory Findings*

Moderate to severe anemia with hemoglobin below 11.0 g/dl, was present in 64.3% of the patients. Leukocytosis was encountered in nearly 50% of the cases. Derangement of liver functions, *e.g.*, SGOT, and alkaline phosphatase was detected in 31.8% and 59.8%, respectively.

## Discussion

The age distribution of pediastric Egyptian patients with HD was younger than that reported in the Western World.[1,8,9] In this series, these were 46.23% below the age of ten with a peak age at 5 to 9 years. This is similar to that of East Africa reported by Burn *et al.*[10] and some countries of Tropical Africa.[1] Although it has been stated that in South America HD is primarily a pediatric problem,[1] Correa an O'Conor[11] reported that in Columbia 19% of the cases were 0 to 14 years old, and 28% were below the age of 25. This last percentage is identical to that reported in the Third National Cancer Survey.[8]

Males predominated in our series with a sex ratio of 4:1. This male predominance was also reported in US, Europe, and Africa.[9,12,13]

The high frequency of the LD subtype, associated with the type I epidemiologic variety of HD, was not observed in our material. This type is found mainly in developing countries with suboptimal socioeconomic conditions.[11] The low percentage of LD subtype (3.6%) in Egyptian children is in sharp contrast to the 27%, and 38% frequencies reported in Tropical Africa.[10,14] Since it has been suggested that the disease progresses from LP through NS, and MC to the LD subtype,[15] one would expect a longer delay between onset of symptoms and diagnosis for the last two histologic types. However, no such phenomenon was found in Egyptian children. The pathologic subtypes were mostly of the aggressive ones with predominence of mixed cellularity type.

Our cases tend to be mostly of the late Stages III and IV. Tumor burden is high and large lymph nodes 8 cm or more were encountered. Celiotomy detected more organ involvement than by clinical assessment. Symptoms were detected in 51.4% of cases in contrast to 65% of children with HD in Uganda.[14]

The data of the current report are in general agreement with our previously published series of 65 children with HD.[16] The proper staging in this series changes the percentage of Stages III and IV from 89% to 63.22%. As schistosomal infestation is still endemic in rural Egypt, with the possibility of hepatic and splenic involvement, celiotomy seems mandatory in our cases to accomplish proper staging.

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