

# Hodgkin's Disease in Osaka, Japan (1964-1985)

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**Abstract**—In the present study, 96 cases of HD selected from 937 cases of malignant lymphomas in Osaka, Japan were reviewed to evaluate a time trend of HD. The results showed that, during the periods from 1964-74 to 1975-85, (1) ratio of HD among all malignant lymphomas decreased from 14.8% to 8.9%, (2) MC decreased and NS increased, and (3) the age of onset fell.

## INTRODUCTION

THE INCIDENCE of Hodgkin's disease (HD) is highest in whites and lowest in Japanese [1]. Previous report on HD in Japanese stated the frequency of HD as 14.5% [2]. Meanwhile it is well-known that adult T cell leukemia/lymphoma (ATL), a rarity in Western countries, is not uncommon in Japan [3]. The histology of ATL is characterized by pleomorphism of tumor cells and has tended to be misdiagnosed as HD. Indeed, the recent review of the cases of Japanese malignant lymphomas by Tajima *et al.* [4] showed the frequency of HD to be 9.5%.

Epidemiological studies have shown that the incidence rates for cancer at selected primary sites in patients in Osaka, Japan are becoming more close to those observed in North America, i.e., decrease in stomach cancer and gradual increase in lung and colon cancer in both sexes and in breast cancer in females [5]. This time trend of cancer incidence might be due to the change of Japanese life style to Western style [6].

In the present study, 96 cases (10.2%) of HD among 937 cases of malignant lymphomas diagnosed in Osaka, Japan were reviewed. The results are compared to those in the literature, mainly from North America. In addition, the cases were divided into two groups based on the time of the first diagnosis, i.e., (i) 1964-74, and (ii) 1975-85. Differences of age, sex, and histologic subtypes in

these two groups were investigated to examine the time trend of HD in Japan.

## MATERIALS AND METHODS

Biopsy specimens of 16 hospitals situated in Osaka and Hyogo prefectures, Japan (an ATL non-endemic area) were reviewed, a total of 1195 cases being diagnosed pathologically as malignant lymphomas and related disorders during the period 1964-July 1985. Numbers of all biopsy cases were 189,549 and 450,720 during the periods 1964-1974 and 1975-1985, respectively. Paraffin blocks were obtained in all cases and sectioned at 4  $\mu$  for hematoxylin and eosin or, if necessary, additional stains (periodic acid-Schiff reaction, silver impregnation). Without knowing the previous histologic diagnosis, the slides were reviewed by one of us (KA). Two hundred and fifty-eight cases were diagnosed as non-lymphoid malignancy, reactive diseases or undefined diseases; these were eliminated. The remaining 937 were diagnosed as malignant lymphomas, of which 841 were non-Hodgkin's lymphoma (NHL) and 96 (10.2%) were HD. Among 152 cases originally diagnosed as HD, 89 cases were rediagnosed as HD. Thirty-two out of the remaining 63 cases were NHL showing a pleomorphic pattern of proliferation. Seven cases originally diagnosed as NHL were rediagnosed as HD of LP (two cases), MC (one case) and NS (four cases). The age, sex, site of the tumors and histology in 684 cases of NHL being diagnosed during the period 1964-1983 have recently been reported [7]. The cases of HD are the subject of the present study. They were classified histologically according to the criteria established at the Rye Conference [8, 9]. Brief clinical information including age, sex, and site of the tumors were available.

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Table 1. Frequency of histologic subtypes and their age and sex in 96 patients.

	1964-1974			1975-1985		
	No. of cases (%)	Sex ratio (M : F)	Range of age (yr) (median)	No. of cases (%)	Sex ratio (M : F)	Range of age (yr) (median)
LP	3 (9.7)	2 : 1	31-65 (56)	14 (21.5)	1.3 : 1	11-80 (49)
MC	16 (51.6)	1.3 : 1	6-77 (60)	21 (32.3)	5.3 : 1	13-82 (53)
LD	5 (16.1)	5 : 0	6-57 (38)	9 (13.9)	9 : 0	32-81 (61)
NS	7 (22.6)	2.5 : 1	25-81 (34)	21 (32.3)	1.5 : 1	17-75 (41)
Total	31 (100)	2.1 : 1	6-81 (56)	65 (100)	2.6 : 1	11-81 (48)

LP, lymphocytic predominance; MC, mixed cellularity; LD, lymphocytic depletion; NS, nodular sclerosis.

## RESULTS

The percentage of specimens of all forms of malignant lymphomas, NHL, and HD among all the biopsies taken during 1964-74 and 1975-85 were 0.111%, 0.094%, and 0.016% and 0.161%, 0.147%, and 0.014%, respectively. Ratios of HD among all malignant lymphomas during 1964-74 and 1975-85 were 31/210 (14.8%) and 65/727 (8.9%), respectively. Age distribution of the patients diagnosed during 1964-74 and 1975-85 are shown in Fig. 1. Peak incidences during 1964-74 and 1975-85 and seventh and fourth decades, respectively.

All but one of the patients had nodal diseases. In one case, the primary lesion was in the stomach. Frequency of each histologic subtype and their age and sex in 96 cases are shown in Table 1; 17 lymphocytic predominance (LP), 37 mixed cellularity (MC), 14 lymphocytic depletion (LD), and 28 nodular sclerosis (NS). From the period 1964-74 to 1975-85, the frequencies of MC decreased, whilst LP and NS increased, with an accompanying a fall of age at the time of diagnosis.

## DISCUSSION

The frequency of HD (10.2%) among all malignant lymphomas in the present series was lower than that (14.5%) previously reported from Japan

[2], this confirms the recent report on the frequency of HD (9.5%) by Tajima *et al.* [4]. Recently NHL with a pleomorphic picture, has been recognised to be characteristic for ATL, and previously these cases tended to be misdiagnosed as HD. The elimination of this tumor from the cases of HD was one of the reasons for this decline in frequency of HD. In the present series, about half the cases originally misdiagnosed cases as HD were pleomorphic NHL. Increase in the frequencies of NHL among all biopsy cases from 1964-74 (0.094%) to 1975-85 (0.147%) was another reason for decline in frequency of HD among all malignant lymphomas. Meanwhile frequency of HD showed a slight but insignificant decrease from 0.016% to 0.014%.

Histologic subtypes of HD in Japan, when compared to those in North America, showed relative lower frequency of NS and higher frequency of MC; the frequency of LP, MC, LD, and NS have been reported to be 5-8%, 59-63%, 13-20%, and 16-18%, respectively in Japanese literature published before 1974 [10, 11] and 5-25%, 27-42%, 6-25%, and 26-52%, respectively in America [12-14]. This relative frequency of the subtypes of HD in Japan was found in the present series of 1964-74, in that the frequencies of MC and NS were 51.6% and 22.6%, respectively. After 1975, however, the frequencies of each histologic subtype changed and came to resemble those usually observed in America; the frequencies of MC and NS were equal, 32.3%. Meanwhile the ratio of HD among all malignant lymphomas during 1975-85 (8.9%) was lower than that during 1964-74 (14.8%).

A peak of the onset of HD at an older age in Japanese than in Americans has been described, for example, Kageyama *et al.* reported that peak incidence of Japanese HD was sixth decade of life [10]. The change of histologic subtypes in the present series was accompanied by a decline of median age from 56 (1964-74) to 48 (1975-85) yr of age. The peak incidence of the cases during 1975-85 was between 30 and 40 yr old. This median age of 48 yr in the present series was yet

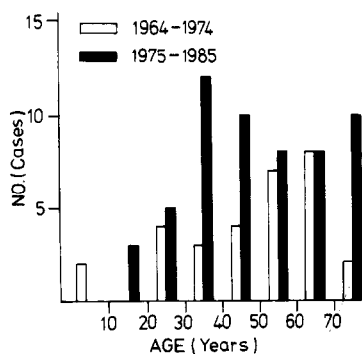


Fig. 1. Age distribution of patients during both 1964-74 and 1975-85 showed bimodal patterns. Meanwhile peak incidence fell from 6th decade (1964-74) to 3rd decade (1975-85).

higher than that reported in HD from North America, third decade of life [13, 15].

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