

## PULMONARY LATE EFFECTS AFTER TREATMENT OF CHILDHOOD HODGKIN'S DISEASE

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**Aim:** To investigate pulmonary late effects in children treated for Hodgkin's Disease (HD) with various treatment modalities and also to determine related risk factors.

**Patients and methods:** We retrospectively reviewed the records of 100 children treated for HD at our institution from 1982 to 2007. Patients had received 3-6 cycles of COPP and/or ABVD regimens and low-dose involved field radiotherapy. Pulmonary function tests (PFT) were performed with spirometry, body plethysmography and diffusing capacity measurement. All the patients respiratory symptoms were scored and chest radiographies were evaluated at PFT time.

**Results:** Mean age at diagnosis was  $9.0 \pm 4.4$  years (M/F: 76/24). Median cumulative bleomycin and cyclophosphamide doses were  $60 \text{ mg/m}^2$  and  $3600 \text{ mg/m}^2$ , respectively. 59/100 cases received mediastinal radiotherapy (RT) (median, 2210 cGy). Median time from end of treatment to this study was 8.3 years (1-28.4). Mean age of 100 cases at time of the study were  $19.9 \pm 6.5$  years. PFT abnormalities were detected in 26 children. Obstructive pattern was detected in 8, isolated restrictive pattern in 8, isolated diffusing impairment in 7 and "restrictive and diffusing impairment" in 3 cases. 15/100 patients had varying degrees of respiratory symptoms. PFT abnormalities were significantly more frequent in patients who received mediastinal RT (33.9% vs 14.6%,  $p=0.02$ ). Restrictive pattern was more common in patients who were treated with mediastinal irradiation ( $p=0.051$ ). Median DLCO values of patients who received bleomycin or not were 97.8 and 108.4, respectively ( $p=0.005$ ). 40% of patients <6 years of age at diagnosis had PFT abnormalities compared to 18.5% in those older ( $p=0.03$ ). Patients with an abnormal chest X-ray had more frequent PFT abnormalities than those with normal chest X-ray (60% vs 27%;  $p=0.003$ ). Patients who had experienced various pulmonary problems during the treatment period had more frequent PFT abnormalities ( $p=0.027$ ). Occurrence of PFT abnormalities was not significantly associated with pathological features, spleen involvement, B symptoms status, respiratory symptoms, the time elapsed from treatment completion and chemotherapy regimens or drug doses.

**Conclusion:** Mediastinal irradiation, advanced stage disease at diagnosis, young age at diagnosis and presence of lung problems during treatment were found as significant risk factors for PFT abnormalities. Patients with abnormal chest X-ray had more frequent PFT abnormalities. Since patients may be asymptomatic for many years, long-term follow-up for pulmonary late effects is crucial in children treated for HD.