

Stroke following therapy for Hodgkin Disease (HD): A report from the Childhood Cancer Survivor Study (CCSS)

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INTRODUCTION: An increased risk for strokes has not been previously reported among HD survivors. This report examines the rate and risk factors for stroke in long-term survivors of HD.

METHODS: The CCSS is a multi-institutional cohort study of long-term (≥ 5 years) survivors who were diagnosed between 1970-1986. The rate of first occurrence of self-reported strokes was determined for HD survivors (N=1665) and compared with a random sample of siblings of childhood cancer survivors (N=3846). The mean age at interview of the HD survivors was 31.9 years of age, with a mean age at diagnosis of 14.6 years. The incidence rates of HD survivors at ≥ 5 years post diagnosis and siblings were calculated separately. Cox proportional hazards models were used to estimate rate ratio (RR) of developing stroke between HD survivors and siblings.

Results: Fifteen HD survivors reported a stroke: one during therapy, 13 occurring ≥ 5 years after HD diagnosis, and one without an age at stroke reported. The rate of stroke in HD survivors ≥ 5 years post diagnosis was 0.68 per 1000 person-years (95% CI, 0.40-1.18). Of the 13 late occurring strokes, all had chest/mantle radiation (median dose 40 Gy), with a median interval of 15 years from HD diagnosis to stroke. The median age of stroke was 31 years (range 21-40). Seven siblings reported a previous stroke, with a rate of 0.069 per 1000 person-years (95% CI, 0.03-0.15). The RR of stroke for all HD survivors, in comparison with siblings, was 3.88 (95% CI, 1.46-10.3; $p = 0.0065$). The rate of stroke for HD survivors who were treated with chest radiation therapy (RT) was 0.82 per 1000 person-years (95% CI, 0.48-1.41). Compared to siblings, the RR of HD survivors treated with chest RT was 4.28 (95% CI, 1.6-11.2; $p=0.0031$). Anthracycline exposure, treatment with chemotherapy only, hypertension and diabetes mellitus were not associated with an increased risk of stroke.

Conclusions: Though an infrequent outcome, survivors of childhood HD may be at an increased risk of stroke. In this study, previous exposure to chest RT was strongly associated with risk of stroke. Because the risk may be modified by prevention, it is imperative to further study this process.