geal carcinoma with a bulky tumoral volume. The more better results were obtained by combined therapy but posed the problem of the risk of long term sequelae.

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Statural growth impairment and growth hormone deficit as a late effect in childhood medulloblastoma: a comparison of hyperfractionated versus conventionally fractionated craniospinal radiotherapy

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Purpose: With more patients potentially living longer due to the improvement in survival in childhood medulloblastoma, the negative late effects of radiotherapy (RT) on statural growth become important factors to consider when treatment decisions are planned. Hyperfractionation can reduce the delayed effects of RT.

Methods and materials: The authors compared the incidence of growth alterations and GH deficit (GHD) after hyperfractionated craniospinal RT (Group A, n=13 patients; 1 Gy bid, 36 Gy CSI followed by 30 Gy posterior fossa boost) versus conventionally fractionated RT (Group B, n=22 patients; 36 Gy CSI followed by 18 Gy boost to the posterior fossa) in a group of children with medulloblastoma.

Results: The mean age at the time of tumor diagnosis was 8.1 years in Group A (10 patients were prepubertal, 2 were treated at the beginning of puberty and 1 at the end of puberty) and 8.9 in Group B (19 cases were prepubertal). Patients were followed for a mean of 6.2 years for Group A and 10.2 years for Group B. All prepuberal patients were evaluated yearly for standing height, height velocity (HV), sitting height (SH), subischial leg length (SLL) and bone age. GH secretion was evaluated 2 years after RT when HV fell below the 10th percentile. In the first year after RT growth was constantly impaired in all patients due to malnutrition. In the following years we observed among Group A patients treated during prepuberty or at the beginning of puberty a reduction of HV in 11/12 cases; in 6 cases GHD was noted 2-4 years after RT, while in 5 patients GH secretion was normal. In one patient treated at the beginning of puberty GHD was noted only very late (9 years after RT). SH was more reduced than SLL in 11/12 cases (selective growth impairment due to spine RT). The patient treated at the end of puberty showed normal GH secretion 6 years after RT. In all Group B patients GHD occurred between 2 and 6 years after RT. Analysis by cumulative incidence function showed a statistical significant difference (p=0.03) between the two groups; the probability of normal GH secretion at 4th year after RT was 60.6% (SE=13.8) in Group A and 9.1% (SE=6.1) in Group B patients.

Conclusions: The current study findings suggest that the use of hyperfractionated craniospinal RT is associated with a lower risk of statural growth impairment; in particular GHD is less frequent and longer deferred in the group treated with hyperfractionated than conventionally fractionated RT.

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Ovarian function in young women treated for Hodgkin's disease in childhood

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Purpose; To review ovarian function in female long term survivors of childhood Hodgkin's Disease (HD).

Method: The records of young women attending our long term follow up clinic, who were treated with alkylating agents for HD in childhood, were reviewed. Information on age at diagnosis, age at menarche, number of pregnancies and hormone profile was extracted.

Results: Between 1974-95 21 females, median age at diagnosis 12y 8m (range 8y10m - 15y6m) were treated with a median of 6 courses (range 3-8) of Chlorambucil, Vinblastine, Procarbazine and Prednisolone (ChlVPP). Four patients had additional chemotherapy with other alkylating agents. One of these 4 patients has primary amenorrhoea and another secondary amenorrhoea. All other patients have a normal menstrual cycle with normal gonadotrphin levels. Fourteen patients were menstruating at the time of diagnosis of HD. There have been 29 pregnancies in 16 patients, median age at first pregnancy 26y (range 19-29y), resulting in 25 live births (1 twin), 3 terminations and 2 spontaneous abortions. Six pregnancies occurred in women over 30y. Median length of follow up is 19y (range 6-27y) and median age at follow up is 30y (range 19-36y). To date there is no evidence of premature menopause in our patients treated with ChlVPP alone.

Conclusion: Female patients treated with ChlVPP chemotherapy have good prospects of fertility, and do not appear to be at risk of menopause under 30y. Continuing follow up is important as these patients may still have an early menopause and be at risk of osteoporosis.