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LOW GRADE ASTROCYTOMA: POST SURGICAL IRRADIATION  
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Fifty-eight patients affected of low grade glioma were admitted to the Radiation Oncology Dept. There were 26 males and 22 females with a mean age of 42 yrs (r 8-67). Forty-three patients had seizures (74%). Supratentorial region was affected in 47 cases and infratentorial in 11 cases. The surgical procedure was as follows: total and subtotal resection in 18 p (31%) and partial resection and biopsy in 40 p (69%). The Karnofsky index (KI) was: 49 p more-equal than 70% and 9 p lesser than 70%. The radiation mean dose in tumour bed was 53.1 Gy (44.5-66). Response rates were: CR in 31 p (53.5%), PR in 8 p (14%), NR in 13 p (22%) and P in 6 p (10.5%). 10/31 p relapsed (32%) and 70% did it in tumour bed. Mean of survival was 34m (4-154). Actuarial survival at 5 and 10 yrs was 54%. We have studied as prognostic factors age, seizures, KI, infratentorial location, type of surgery, radiation dose and kind of response. Then, we have observed that a good KI, the most radical surgery and the CR after combined treatment were important prognostic factors in the survival.

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CHEMOTHERAPY IN PEDIATRIC INTRACRANIAL GERM CELL TUMOR  
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Primary intracranial germ cell tumor (GCT) is generally treated with whole neuraxis irradiation. Chemotherapy is increasingly advocated in those with non-germinomatous tumors or in those with ventriculoperitoneal (VP) shunts. Our concern over the adverse effects of spinal irradiation in the prepubertal children has led us to use chemotherapy to spare the procedure except in case of positive CSF cytology. From 1983 to 1992, twelve prepubertal children aged 4.4 - 14.0 (median=8.4) were seen in the Queen Mary Hospital with primary intracranial GCT. Six were germinomas and six were non-germinomatous tumors. A VP shunt was required in four of them. One was managed with surgery alone. Three patients received cranial or craniospinal irradiation as the only form of treatment. Chemotherapy containing cisplatin was used as an adjunct to cranial irradiation in six and as the mainstay treatment in the two remaining children. Seven patients (58%) are alive without disease at a follow-up of 12-112 months. Two were under treatment at the time of writing but both have demonstrated >90% reduction in tumor size. There have not been any spinal or peritoneal metastases. Three patients (25%) died of which one can be ascribed to chemotherapy-related toxicity. Other complications of chemotherapy include cytopenias (8/8), neutropenic fevers (6/8), transient renal tubular dysfunctions (4/8), renal failure (2/8), alopecia (8/8), and high-tone hearing loss (3/8). It is concluded that while adjuvant chemotherapy is effective in primary intracranial GCT and deserves evaluation in sparing young children from spinal irradiation and protecting against extracranial metastases, its administration should be used with caution.

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RESULTS OF RADIOTHERAPY IN COMBINED TREATMENT OF  
PITUITARY ADENOMAS

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Between 2.1995 and 7.1992, 53 pts (29 females, 24 males) with pituitary adenomas underwent combined treatment including radiotherapy (RT). 47 pts had initially surgical resection of the tumour and 15 had hormonotherapy (HTH) after RT. In 40 pts surgery was incomplete and 4 relapsed after radical resection. Pts were irradiated with 3-field technique with Co-60, 9 MV and 15 MV photons and received 50-54 Gy/28-30 fr, at 90% isodose line. Follow-up ranged from 6 to 78 mos (m - 36 mos). In 36% CR was obtained after RT. In 28 (79%) vision became normal after RT. 28 pts had endocrine abnormalities. In 14 (50%) hormone levels normalized and in 12 (43%) decreased significantly. Hormonal remission was not correlated with radiological CR. HTH (mainly bromocriptine) was highly effective in 14/15 pts with persistent hormonal hypersecretion. 2 pts (3.7%) with clinical remission lost vision 10 mos after RT.

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THE IMPACT OF RADIOTHERAPY ON QUALITY  
OF LIFE IN LOW-GRADE GLIOMA PATIENTS

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There is debate on the role of radiotherapy in treating low-grade glioma. For this reason the impact of radiotherapy on quality of life was studied in 41 patients with biopsy-proven supratentorial low-grade glioma. Twenty patients (age 18-66 years) had been treated with radiotherapy at least one year before (range 1-11 years); 21 patients (age 19-65 years) only had surgery or biopsy 1 to 12 years before. Apart from the neurological and functional status, the patients' cognitive, affective and psychosocial status were determined. None of the patients had significant neurological impairment and their Karnofsky index was at least 70. However, more specific examination of cognitive functions (e.g., memory, word fluency, planning and concentration) and the affective status (Profile of Mood States) indicated moderate to severe disturbances in nearly all patients, who also suffered from fatigue and depressed moods. Between the two glioma groups, however, there was no significant difference on any of these parameters. It is concluded that the disturbances observed in these patients are not to be attributed to radiotherapy but rather, at least in part, to the tumour.

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STEREOTACTIC INTERSTITIAL BRACHYTHERAPY FOR  
MALIGNANT GLIOMAS

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In 1987 we initiated a clinical study to evaluate the role of stereotactic I-125 brain implants in the treatment of malignant gliomas. A total of 48 interstitial implants were performed with a median dose of 4450 cGy. Twenty-six of the 48 patients were treated as the primary treatment. Mean follow up is 17 months (range 6-44 months), and medial survival is 23 months (range 6-40 months). To date, 10 out of 48 patients are alive 10-40 months following treatment. Analysis of historic data identified 11 patients who would have been candidates for a stereotactic implant but were treated with conventional surgery and radiotherapy. Medial survival of the group was 59 weeks, with all patients dead by 81 weeks. In comparison, the medial survival of patients treated with the stereotactic implant was 101 weeks (P=.008). In conclusion, stereotactic brain implants improve survival of selected patients with malignant gliomas.

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FIXED DOSE STEREOTACTIC RADIOTHERAPY FOR  
VASCULAR MALFORMATIONS OF THE BRAIN:  
FACTORS INFLUENCING OUTCOME

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Stereotactic multiple arc radiotherapy (SMART) is used to treat vascular malformations of the brain which carry an unacceptably high risk of surgical excision. Between March 1989 and January 1993 a total of 90 patients have been treated (83 arteriovenous malformations - AVM, 7 angiographically occult vascular malformations - AOVM). All patients received 17.5 Gy prescribed to the 90% isodose using 5 non coplanar 140° arcs from a 6MV linear accelerator. In the AVM group, complete angiographic obliteration was demonstrated in 6/17 (35%) patients studied 12-18 months and in 11/18 (61%) patients studied 18-24 months post SMART. Using the estimated volume of the AVM nidus, complete obliteration was seen in 11/18 (61%) of lesions <10cm³ and in 6/17 (35%) lesions >10cm³. Symptomatic neurological complications occurred in 6 AVM patients (actuarial risk 12% at 2 years) with 2 patients having continuing morbidity. There was no correlation with the treated AVM diameter although an analysis of the estimated volume of irradiated normal brain tissue will be presented. 5/7 patients with AOVM developed neurological complications, 2 of which appear permanent. No patient has rebelled. Conclusions:- 1) Using a constant prescribed dose, complete angiographic obliteration rates increase with time following SMART and are inversely proportional to the volume of the treated nidus. 2) AOVM's should not be treated with the above protocol. 3) The optimal prediction of neurological complications requires further evaluation.