

(E) OUTCOME DATA

30-day Perioperative outcomes for intra-axial tumors (2007-2009)

Major morbidity:

Overall :	17%
Neurological worsening:	11%
Surgical site infection:	07%
Perioperative Mortality:	3.5%

SURVIVAL— GBM

We report 5-year survival data in patients with newly diagnosed glioblastoma treated with radiotherapy along with concurrent and adjuvant temozolomide (TMZ). Patients with newly diagnosed histopathologically proven glioblastoma underwent surgery followed by external radiotherapy to a total dose of 60 Gy in 30 fractions over 6 weeks. Concurrent oral TMZ (75 mg/m²) was given daily with RT followed by adjuvant TMZ for 5 days every 28 days for six cycles (150 mg/m² for the first cycle and 200 mg/m² for rest of the cycles). Patients were monitored clinicoradiologically as per standard practice All six adjuvant cycles were completed in 68%. The 2-, 3-, 4-, and 5-year survival was 34%, 24%, 11%, and 11%, respectively (95% CI 14.03–21.96). The median overall and progression-free survival was 18 (2–92 months) and 16 months (2–72 months), respectively. On multivariate analysis, completion of all six cycles of adjuvant TMZ was associated with significantly better survival ($p = 0.000$). Neurological performance score (NPS) of 2–3 ($p = 0.06$) and Recursive Partitioning Analysis class V ($p = 0.093$) showed a trend towards poorer outcome. Treatment was generally well tolerated with only 2.5% of patients developing grade 3 anemia, leucopenia, and neutropenia. Grade 3 or 4 thrombocytopenia was seen in 5% patients. We therefore concluded that concurrent radiotherapy and TMZ followed by adjuvant TMZ results in encouraging survival even at a long follow-up. . (*Journal of Clinical Oncology*, 2009 ASCO Annual Meeting Proceedings (Post-Meeting Edition).

The purpose of this study was to report our experience with concomitant and adjuvant temozolomide (TMZ) with

radiotherapy in patients with newly diagnosed glioblastoma multiforme (GBM). Forty-two newly diagnosed histopathologically proven patients with GBM underwent maximal safe resection followed by external radiotherapy to a total dose of 60 Gy in 30 fractions over 6 weeks along with concomitant oral

TMZ (75 mg/m²) daily followed by adjuvant TMZ for 5 days every 28 days for six cycles (150 mg/m² for the first cycle and 200 mg/m² for rest of the cycles). All patients received concomitant radiation and TMZ with 74% of the patients completing six cycles of adjuvant TMZ. At a median follow-up of 12.5 months, the 1- and 2-year survival was 67 and 29%, respectively. The median overall and progression-free survival was 16.4 and 14.9 months respectively. Concomitant radiotherapy and TMZ followed by adjuvant TMZ prolongs survival in patients with glioblastoma multiforme and is well tolerated in our patient population (*British Journal of Neurosurgery*, December 2007; 21(6): 583 – 587)

CHILDREN LOW GRADE TUMOURS

We reported local control and follow up outcome data of high precision conformal radiotherapy in childhood brain tumours. Between December 1999 and December 2002, 26 children (17 boys and 9 girls, median age 11.5 years) with incompletely excised or recurrent benign and low-grade brain tumours [13 craniopharyngiomas, 11 low-grade gliomas (LGG) and 2 others] were treated with three-dimensional (3D) conformal radiotherapy (CRT) (12 patients) and stereotactic conformal radiotherapy (SCRT) (14 patients). Treatment was delivered with 3–9 conformal fixed fields to a median dose of 54 Gy/30 fractions. The actuarial 2 and 3 year disease free and overall survival was 96 and 100%, respectively (median follow up: 25 months, range 12–47 months) High-precision conformal techniques delivering irradiation to a computer generated target volume employing 7–10 mm 3D margins beyond the visible tumour and/or resected tumour bed appear to be safe in children with incompletely resected or recurrent benign and low-grade brain tumours, based on these data (*Radiotherapy and Oncology* 74 (2005) 37–44).

QUALITY OF LIFE (QOL) — We have conducted studies to assess the QOL in patients seen in routine clinical practice under the BTF and the work has been published in indexed journal.

The aim of this study was to evaluate and assess the impact of various factors on quality of life (QOL) in adult patients with primary brain tumours seen consecutively in routine neurooncology practice. Two hundred and fiftyseven adult patients, after undergoing surgical intervention and histologically proven primary brain neoplasms were registered in the NeuroOncology Clinic at our centre during 1 full calendar year. And found that Patients with a HGG and from high economic strata had more preserved global QOL function than patients in middle/low economic strata. It may well be that patients with HGG have usually functional impairments. Patients from high economic strata with comparatively better supportive care and rehabilitation may have helped them to preserve global QOL score to some extent. However, in benign and low grade tumours where functional impairments are not so severe had no significant difference in different economic strata. (*J Neurooncol* (2009) 95:413–419 DOI 10.1007/s11060-009-9939-8)

ACTIVITIES OF DAILY LIVING (ADL)—

Barthel's Index has been used to assess the functional status with degenerative neuronal disorders in elderly patients with cerebrovascular accidents, brain injury, motor neuron disease, and hemiplegia. In patients with CNS tumours, BI has been used as well to evaluate the efficacy of supportive care or any intervention (radiotherapy or surgery), primarily in elderly patients with high-grade glioma. we, at TMH conducted a study for the Prospective assessment of activities of daily living using Modified Barthel's Index in children and young adults with low-grade gliomas treated with stereotactic conformal radiotherapy and concluded that Young patients with low-grade gliomas after surgical intervention had a lower than normal BI before starting radiotherapy, suggesting a decrease in ADL possibly due to tumour- and surgery-related factors. At 2-year and 3-year follow-up after SCRT, there was no further decrease in mean BI. A significant improvement in BI was seen in visually handicapped patients, patients with poor performance status, and younger patients. Patients who developed tumour recurrence at follow-up had a significantly lower BI at baseline than patients with controlled disease (P B 0.001). (*J Neurooncol DOI 10.1007/s11060-008-9666-6*) These encouraging outcome data that is arguably one of the best around the world is an indication of the hard work, dedication and the policies of our BTF which is proving to be a boon for the patients of all classes and socio economic strata in their fight against brain tumours.

Patients with brain tumors have varied degree of functional and psychological impairments because of factors relating to the tumor or to the treatment they receive. The functional independence measurement and functional activity measurement system (FIM-FAM) is an activity of daily living (ADL) scoring system that may be able to determine impairments in different domains objectively. The mean total FIM-FAMscore of the entire patient population was 167.5 (range 30–208). Scores in self care, sphincter control, mobility items, locomotion, communication items, psychological, and cognitive item domains were 39.49, 10.95, 22.70, 16.44, 28.93, 18.96, and 30.1, respectively. Univariate analysis showed total FIM-FAM scores not significantly different with age (B35 years vs. [35 years; P = 0.994), sex (male versus female; P = 0.133), and grade of the tumor (high-grade versus lowgrade; P = 0.142) but were significantly higher in patients with a Karnofsky performance score (KPS) of C70 as compared with\70 (P = 0.001), neurological performance scale (NPS) of 0 or 1 vs. 2 or 3; P = 0.001), disease type (benign versus malignant; P = 0.001), and site of disease (cerebral versus cerebellar; P = 0.024). Multivariate analysis confirmed these findings for KPS (P = 0.001) and NPS (P = 0.012) only. Age was a significant factor for poorer cognitive function (P = 0.005), psychological (P = 0.045), and self care function (P = 0.001). A trend for correlation between tumor sites with the corresponding function as assesses on the FIM-FAM score was observedFIM-FAM system is relatively simple, easy to perform in routine clinical practice and may be used as a tool for assessment of rehabilitation program. There is strong correlation with age, type of tumor, and site of disease with different functional and cognitive domain impairment. (*J Neurooncol DOI 10.1007/s11060-009-9810-y*)

The ***BTF*** works with the prime objective to minimize the physical, emotional and financial suffering associated with the diagnosis, treatment and rehabilitation of patients with brain and spine tumours, and their families.

- Facilitate the treatment, accommodation, transportation, rehabilitation and special education of such patients. Support the cost of investigation, treatment and rehabilitation for really needy patients with potentially curable tumour. Support research into the causes, treatment and rehabilitation of brain tumour patients. Provide information and support to patients and care-givers of patients with brain tumours. Provide all types of counselling services, including psychological and grief counselling for the patient and the family before and after treatment.
- Public education via print and electronic media
- The ***BTF*** involves agencies such as Hospitals, doctors, occupational therapists, physiotherapists, speech therapists, psychologists and nurses (*presently from the Tata Memorial Hospital (TMH) and King Edward Memorial Hospital (KEM), Mumbai. Later, we plan to involve other centers in Mumbai and elsewhere*) Medical Social Workers (*at the Tata Memorial Hospital and from other agencies*) Cancer Patients Aid Association and V-Care Indian Cancer Society Ambulance services National Association for Blind Spastics Society of India and other organizations which can help us with their expertise and network. Schools: (Special Education Schools as well as normal schools that admit children with various degrees of neuropsychological problems).
- Patient's Support groups: A group of brain tumour survivors and their families in different parts of the country.