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Title: Patterns of care for glioma patients in Canterbury - A decade of care
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Introduction:

Gliomas are the most common adult primary brain tumours, and are rarely curable. Gliomas are graded from I – IV, representing tumour aggressiveness, and thus patient's prognosis. The treatment varies according to the grade and the individual patient, but the gold standard for the treatment of high grade gliomas is surgery followed by combined chemotherapy (temozolomide) and radiation treatment for 6 weeks then six months of further chemotherapy. This treatment was shown to improve overall survival in a randomised controlled trial. We introduced this treatment in Christchurch in 2005.

Aim:

To create a snapshot of patients diagnosed with gliomas in the last decade; including patients' demographics, tumour characteristics and presenting complaints. We intended to assess the treatments, timing of treatments and reasons for treatment. Overall we assessed patient survival and tumour recurrence, trends over the decade, and any correlation between these factors and survival.

Impact:

To ensure all patients diagnosed with a glioma in Christchurch receive optimal treatment and supportive care. This study was performed to identify gaps in care and make recommendations for future patients.

Methods:

Initially over 800 patients were exported to our database, which was reduced to 405 meeting inclusion criteria. Included were adult patients who had their primary treatment in the Canterbury region between 2006-2015 for a grade II, III or IV glioma. Medical records were used to extract data including patient age, gender, tumour site, tumour type, patient overall health, presenting symptoms; rationale, details and dates of treatment; recurrence dates and treatment, Multidisciplinary involvement (Allied Health, Palliative Care, Oncology Nurse Specialist and Psychology) and cause of death.

Results:

Patient demographics: 62% were males and 38% were females; it appears males are more susceptible to primary brain cancer than females. Of the gliomas diagnosed, 63% were grade 4, 10% grade 3, 9% grade 2, and surprisingly 18% of patients did not receive a formal diagnosis because surgery was not undertaken – their glioma was diagnosed based on scans. The most common presenting symptoms were headache (22%), altered cognition (17%), seizure (12%), speech difficulty (12%), weakness (12%), and the remaining 25% represented 21 other presenting symptoms, showing the wide variety of ways glioma patients initially present.

Treatments received for all grade 3/4: 80% received surgery – needle biopsy, open biopsy, partial resection or a total resection. 84% saw an Oncologist. Only 67% of all patients received active treatment – any form of radiation or chemotherapy, thus almost one third of

patients received symptom care only. Of those patients who had active treatment, only 68% received the recommended chemotherapy and radiation combination, and only 55% of *those* chemo-radiation patients fully completed the gold standard treatment, as outlined in the introduction, with reasons for not completing including the patient's choice, the patient dying or progressing early, adverse effects and poor overall health. It has been proven that if the time from surgery to start of radiation is 28 days or less there is improved survivals, however in the past decade, the average time to radiation was greater than 28 days every year. Majority of patients received Allied Health, Palliative Care and Specialist Oncology Nurse input, but only 7% received specific psychological input – an area for improvement for future glioma patients.

Survival: Surprisingly 32% of patients with a high grade glioma died or their disease progressed significantly within three months, illustrating the aggressive nature of these tumours. The median survival for all patients was as follows: Grade 2; 4.4 years, with a range of 0.1 to 10.1 years, Grade 3; 15.4 months, range 0-9.8 years, Grade 4; 7.4 months, range 0-8.5 years. In Stupp et al, 2005, the median survival of patients receiving the full chemo-radiation protocol was 14.6 months - in our study, patients with the same inclusion criteria had a median survival of 17 months.

Conclusion:

The highly aggressive nature of high grade gliomas has been shown. For those patients completing the gold standard treatment, we saw a higher median survival than is seen in international standards, which is very encouraging. However, this survival is still low and the majority of patients are not well enough to receive or complete this recommended treatment. To improve survival for these patients we need to maximise the number of patients who are able to complete this treatment, tailor treatments for those currently too unwell to receive the gold standard, and continue to explore new treatment frontiers to improve survival in this devastating disease.