Background & Objectives

Glioblastoma (GBM) is a type of malignant brain tumor and is associated with a very poor prognosis. Its incidence in Spain and UK are 1.6 and 4.0 per 100,000 person years. According to the European Society for Medical Oncology (ESMO) guideline, surgery is performed on newly diagnosed patients. Concomitant and adjuvant temozolomide (TMZ) is the standard of care for patients younger than 70. TMZ is recommended for 5 days every 21 weeks and repeated for six cycles as maintenance treatment after the end of radiation. Other chemotherapies, such as procarbazine, lomustine and vincristine (PCV) regimen did not show improvement in survival during clinical trials. It has been shown that temozolomide and bevacizumab can be used in combination, however, real-world use of surgery and chemotherapy for GBM patients in European countries has not been extensively studied.

Methods

This study used the oncologist-surveyed data from the IMS Link™ Oncology Analyzer database. This database uses a sample projection technique to create a representative sample for each country, based on oncologist Demographic & Clinical Information. Front-line patients aged 20 or older and diagnosed with GBM by the 16th of April 2010 were included for analysis. To characterize real-world treatment patterns among front-line patients with GBM in Germany, France, Italy, and Spain (EU-5), concomitant medications were descriptively examined for the EU-5, overall, and by individual country.

Results

A total of 64,832 patients from Germany (24,377), France (12,521), Italy (11,678), UK (8,427), and Spain (7,666) were included. The majority were male (60%), except Germany was 50% and Italy was 55% (Table 1). Comorbidities were similar across countries, except COPD (5%, whereas Spain was 19%) and cardiac dysfunction (4%, whereas Germany was 21%) (Figure 1).

Surgical procedures including excision of lesion, craniotomy, and lobectomy were performed, on average, in 37% of front-line patients (Figure 2). Lomustine/procarboplatin/vincristine (PCV) regimen was used, on average, for 62% of front-line patients. TMZ was used for 64% of front-line patients (Figure 4a). The other treatments that were used are listed in Figure 4b. Lomustine/procarboplatin/vincristine (PCV) regimen was used in France, Italy, Spain (39%), Germany (4.5%), and the UK (4.2%) (Table 2).

Chemo-radiation therapy was used, on average, for 85% of front-line patients. In the UK, it was used for 82% of front-line patients (Figure 3). Chemo-radiation therapy was used for 84% of front-line patients in Italy, 79% in Spain, 67% in Germany, and 61% in France (Table 3). After surgery, the majority of patients went on to chemo-radiation therapy with TMZ (91%) (Figure 5).

Discussion

• Findings from this study enable us to understand the real world treatment patterns of GBM in EU-5 countries. There is limited availability of real world treatment pattern investigations for EU countries.4

• Surgery was performed in most of the patients in this front-line GBM population. However, it is a pattern of surgery that suggested that patients in France are more likely to not have tumor-removing surgery, but biopsy only. As the standard published by EANO states surgery should be undertaken for patients stable enough for it, the high rate of biopsy-only could be the result of a greater number of frail patients. However, patient age of diagnosis was similar across EU-5 countries and France had fewer patients with COPD than Spain and cardiac dysfunction than Germany suggesting that patients in France were more informed from their counterparts in other countries. This suggests that the biopsy-only practice has an alternative and perhaps non-medical basis.

• Radiation and concomitant temozolomide therapy was the most commonly used treatment, which is consistent with the ESMO guidelines.5 Within the small percentage of patients receiving non-TMZ treatment, procarbazine, lomustine and vincristine (PCV) regimen was used most often in UK, and in this cohort setting, bevacizumab was used as monotherapy or combination therapy in all countries except for Italy. Although these alternate treatments are used in a limited patient group, the differences among countries are notable.

• Our findings revealed that there are some variations in GBM treatment across the EU-5 countries. For example, in UK temozolomide was not used as commonly as the other EU 4 countries. This is consistent with the NICE guidelines where adjuvant chemotherapy (irradiation of temozolomide after surgery) is not included as part of standard therapy in UK.6

• This study has the following limitations:

  • Switching and discontinuation could not be determined from the CA analyzer tool
  • Previous therapy and diagnosis recall and therefore might lead to ‘recall bias’
  • Physicians may have inadvertently included fewer complicated patients in the database because reporting their data required more effort during the survey

Future research may implement a prospective study medical chart review design to overcome recall bias and possibly provide more detailed, comprehensive information on the treatment pattern of GBM patients including diagnostic test findings, symptomatic decline, steroid use, MRI changes, and other relevant variables.

Conclusions

To our knowledge this is the first detailed investigation into the front-line treatment patterns of GBM across the five EU countries. The common front-line treatment for GBM was found to be surgery followed by temozolomide chemotherapy, consistent with the ESMO guidelines. However, there were significant variation across countries with regard to the frequency of surgery and type of surgery, concomitantly, chemotherapy initiation, and concomitant medications. This study should be considered “descriptive and directional” only with respect to the retrospective nature of the data collection. Further studies / ‘rigorous investigations’ could improve the scope and robustness of these results, however, given the low incidence and prevalence of GBM, getting large patient numbers is a difficult task.

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