of cyclophosphamide over a period of 4 days, after which they were regularly followed for up to 2 years (median 15 months).

Baseline EDSS score did not increase by more than 1.0 in any patient, and five patients had a decrease of 1.0 or more (range 1.0–5.0). No patients were found to have developed new lesions on MRI, and no patients had enhancing lesions. A considerable improvement in quality of life was reported by all 10 patients in whom this parameter was measured, and 7 of 8 patients reported a reduction in their fatigue levels.

The authors conclude that treatment with high-dose cyclophosphamide can stabilize disease progression and improve both the quality of life and functionality of patients with severe refractory MS. They add that further studies should be undertaken to determine the most appropriate patients for the treatment.

Original article Gladstone DE *et al.* (2006) High-dose cyclophosphamide for moderate to severe refractory multiple sclerosis. *Arch Neurol* **63:** 1388–1393

Topiramate has high efficacy and tolerability in treating chronic tension-type headache

Drugs currently used for treating chronic tension-type headache only reduce headache frequency by about a third and are associated with side effects. Topiramate, an antiepileptic drug with potential mechanisms of action including sodium channel blockade, inhibition of glutamate receptors, and enhancement of γ-aminobutyric acid $(GABA)_A$ receptors, has proven efficacy and tolerability in migraine. In a prospective open-label study, Lampl and co-workers have shown this drug to have promise in the prophlyaxis of chronic tension-type headache.

Of the 51 patients enrolled, 46 completed 24 weeks of treatment with topiramate (titrated from 25 mg daily at study start to 100 mg daily by week 4 of treatment). The frequency of headache declined significantly at weeks 13–24 compared with baseline (12.58 ± 6.28 days vs 23.50 ± 5.32 days; $P<0.0001$), with 73% of patients experiencing a 50% reduction in headache frequency. The frequency of severe headaches also decreased significantly ($P<0.0001$). On the visual analog scale, average headache intensity dropped from 6.13 to 2.07 ($P<0.0001$). Mood, sleep, quality of life and Beck Depression Inventory II score also all improved significantly during the study period ($P<0.0001$ for all). Patients experienced few side effects (none of which were severe) and lost a mean 2.14 kg in weight between baseline and week 24 ($P<0.0001$), overcoming the problem of weight gain seen with some other prophylactic therapies.

Topiramate would thus seem to be highly effective in preventing chronic tension-type headache, with a more-favorable side effect profile than other available treatments. These preliminary results, however, require further validation.

Original article Lampl C *et al.* (2006) A prospective, open-label, long-term study of the efficacy and tolerability of topiramate in the prophylaxis of chronic tension-type headache. *Cephalalgia* **26**: 1203–1208

Quantification of glycosyltransferase mRNA in GBM has prognostic value

Glioblastoma multiforme (GBM) tumors are the most aggressive of the common adult primary brain tumors. A test that could reliably and quickly diagnose a GBM tumor and provide prognostic information would be clinically valuable.

Accumulating evidence indicates that the histological type and grade of a tumor is reflected in its glycolipid profile. Using real-time reverse transcriptase-polymerase chain reaction (RT-PCR), Oblinger *et al.* quantified the expression of five glycosyltransferase mRNA transcripts in gliomas and found an association between low expression of GM1 synthase and a diagnosis of GBM, indicating that GM1 synthase transcript measurements could aid GBM diagnosis. In addition, the researchers demonstrated a positive correlation between patient survival and a high GD3 synthase mRNA expression level combined with a low β-1,4-*N*-acetylgalactosaminyltransferase (GalNAcT) mRNA expression level. Patients with the highest GD3 synthase: GalNAcT mRNA ratio (>16:1) had a median survival of over a year, while those with the lowest ratio (<4:1) had a median survival of 179 days ($P \sim 0.002$ controlling for age). These findings were supported by the reanalysis of 80 GBM tumor glycolipid profiles generated for an earlier study. The reanalysis revealed that patients whose tumors had showed a high accumulation of the gangliosides GM3 and GD3 (which accumulate when GalNAcT