
ISPOR Abstract

Evaluating Matching-Adjusted Indirect Comparison and Simulated Treatment Comparison Techniques: Impact on Health-Related Quality of Life of Focussed Ultrasound Thalamotomy and Other Interventions for the Treatment of Medication-Refractory Essential Tremor

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Objectives

MR-guided focussed ultrasound thalamotomy (MRgFUS) is an emerging alternative to conventional therapies for the treatment of essential tremor (ET). However, comparing these therapies is challenging due to between-study heterogeneity and few randomised controlled trials. We aimed to use matching-adjusted indirect comparison (MAIC) and simulated treatment comparison (STC) to compare MRgFUS to deep brain stimulation (DBS).

Methods

A systematic literature review (SLR) identified health-related quality of life (HRQoL) data for MRgFUS and DBS for the treatment of medication-refractory ET from electronic databases and conference proceedings in November 2016. MRgFUS individual patient data (IPD) were compared to aggregate data for DBS using MAIC and STC, using Clinical Rating Scale for Tremor (CRST) Part C score. MRgFUS IPD were adjusted to match DBS aggregate data from each study for patient age, disease duration and baseline CRST Part C score.

Results

The SLR identified 1,532 records; screening yielded 50 relevant articles. Five DBS studies and one MRgFUS study were ultimately analysed. For 1 and 3 months the MAIC and STC results were similar (adjusted difference and 95% confidence interval; positive value favours MRgFUS): 1.92 (-0.94, 4.79) [MAIC] and 1.67 (-0.74, 4.08) [STC]; -0.21 (-3.22, 2.81) [MAIC] and 0.13 (-2.46, 2.72) [STC], respectively. At 6 and 12 months, neither method performed reliably for all comparisons, as judged by convergence (MAIC), regression model fit (STC) and DBS study quality. The most reliable 12-month estimate used MAIC (-1.39 [-3.40, 0.63]). The 12-month MAIC was not consistent with the corresponding STC (-1.85 [-3.58, -0.11]), likely due to the unsuitability of the STC regression model.

Conclusions

MAIC and STC suggest that MRgFUS and DBS are similar in terms of improvement in CRST Part C score. Although these methods enabled comparisons to be made, limited data availability and differences in clinical study design limited the applicability of these techniques.

Please e-mail william.marsh@costellomedical.com for a copy of the slides presented.