The ASPECT Study – Longitudinal assessment of ataxia in children following surgical resection of posterior fossa tumour

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Background

Ataxia is the most common motor problem in children with posterior fossa tumours. However, the natural history of ataxia following surgical resection is poorly understood.

Objective

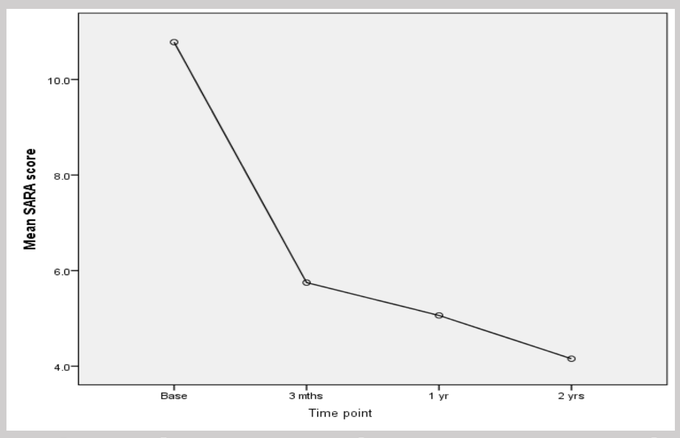
To report the natural history of ataxia in the first two years following surgical resection of a posterior fossa tumour.

Methods

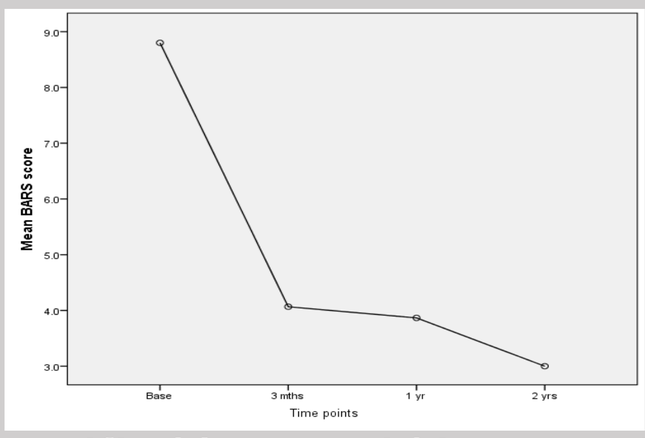
20 children (mean age 9.9 years, range 5-15 years) who had undergone resection of a posterior fossa tumour were assessed using the Scale for the Assessment and Rating of Ataxia (SARA)[1], Brief Ataxia Rating Scale (BARS)[2] and the Pediatric Evaluation of Disability Index mobility subscale (PEDI)[3] at the following time points; initial post operative period, then at 3 months, 1 and 2 years post operatively.

Results

Ataxia scores rapidly improved between baseline and 3 months post-operative assessment (mean reduction in SARA 4.8, BARS 4.6). There were gradual improvements at 1 year and 2 years post op (mean reduction SARA Year 1 0.6, Year 2 0.9; BARS Year 1 0.2, Year 2 0.9 respectively).



Change in SARA over time



Change in BARS over time

Functional scores demonstrated similar improvements quantified by a rapid increase in PEDI score between initial and 3 month assessments (mean increase 26) and gradual increases at 1 and 2 years (mean increase 2, 2.5 respectively).

Conclusions

The largest change in ataxia scores and functional mobility scores (PEDI) is demonstrated within the first 3 months post operatively. Ongoing gradual improvement in ataxia and mobility function was observed at 2 years. However, change after 3 months is less than the minimally clinically important difference reported for both the SARA (MCID reported as 1 in adults[1]) and PEDI (MCID reported as 11% in children[4]). These results have implications for management of children with posterior fossa tumours.

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2 Schmahmann, J., Gardner, R., MacMore, J., Vangel, M. (2009). Development of a Brief Ataxia Scale (BARS) Based on a modified form of the ICARS. *Movement Disorders*. 24 (12) p.1820-1828.

3 Hayley S., Coster W., Ludlow L., Haltiwnager J., Andrellow P. (1992). Pediatric Evaluation of Disability Inventory: Development, Standardization and Administration Manual. Boston: Trustees of Boston University.

4 Iyer L., Haley S., Watkins M., Dumas H. (2003) Establishing minimal clinically important differences for scores for the pediatric evaluation of disability inventory for inpatient rehabilitation. *Physical Therapy*. 83 (10) p888-898.

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