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Tuberculous meningitis (TBM) leads to death or disability in half the affected individuals. Tools to assess severity and predict outcome are lacking. Neuro-specific biomarkers could serve as markers of the severity and evolution of brain injury, but have not been widely explored in TBM.

Rohlwink et al. examined biomarkers of neurological injury (neuromarkers) and inflammation in pediatric TBM and their association with outcome.

Blood and cerebrospinal fluid (CSF) of children with TBM and hydrocephalus taken on admission and over 3 weeks were analysed for neuromarkers S100B, neuron-specific enolase (NSE) and glial fibrillary acidic protein (GFAP), and multiple inflammatory markers. Results were compared with 2 control groups; patients with 1) a fatty filum (abnormal filum terminale of the spinal cord), and 2) pulmonary tuberculosis (pTB). Imaging was conducted on admission and at 3 weeks. Outcome was assessed at 6 months.

Data were collected from 44 TBM cases (median age 3.3 [0.3-13.1] years), 11 fatty filum (median age 2.8 [0.8-8] years) and 9 pTB controls (median age 3.7 [1.3-11.8] years). Seven cases (16%) died and 16 (36%) had disabilities. Neuromarkers and inflammatory markers were elevated in CSF on admission and for up to 3 weeks, but not in serum. Initial and highest concentrations in week 1 of S100B and NSE were associated with poor outcome, as were highest concentration overall and an increasing profile over time in S100B, NSE and GFAP. Combined neuromarker concentrations increased over time in patients who died, whereas inflammatory markers decreased. Cerebral infarcts were associated with highest overall neuromarker concentrations and an increasing profile over time. Tuberculomas were associated with elevated IL-12p40, IP-10 and MCP-1 concentrations, whereas infarcts were associated with elevated TNF- α , MIP-1 α , IL-6 and IL-8.

CSF neuromarkers are promising biomarkers of injury severity and are predictive of mortality. An increasing trend suggested ongoing brain injury, even though markers of inflammation declined with treatment. These findings could offer novel insight into the pathophysiology of TBM. ¹⁾.

The regular monitoring of athletes is important to fine-tune training and detect early symptoms of overreaching. Therefore the aim of this study was to determine if a noninvasive submaximal running test could reflect a state of overreaching. 14 trained runners completed a noninvasive Lamberts Submaximal Running Test, one week before and 2 days after finishing an ultramarathon, and delayed onset of muscle soreness and the daily analysis of life demands for athletes questionnaire were also

captured. After the ultramarathon, submaximal heart rate was lower at 70% (-3 beats) and 85% of peak treadmill running speed (P<0.01). Ratings of perceived exertion were higher at 60% (2 units) and 85% (one unit) of peak treadmill running speed, while 60-second heart rate recovery was significantly faster (7 beats, P<0.001). Delayed Onset of Muscle Soreness scores and the number of symptoms of stress (Daily Analysis of Life Demands for Athletes) were also higher after the ultramarathon (P<0.01). The current study shows that the Lamberts Submaximal Running Test is able to reflect early symptoms of overreaching. Responses to acute fatigue and overreaching were characterized by counterintuitive responses, such as lower submaximal heart rates and faster heart rate recovery, while ratings of perceived exertion were higher ².

In the early 1980s, Peacock in Cape Town shifted the site of the rhizotomy from the conus medullaris to the cauda equina, and in the past 25 years, more than 200 children have been operated on. We have studied the incidence of spinal deformities after multiple-level laminectomy and recorded a 20% incidence of isthmic spondylolysis or grade-I spondylolisthesis. We have also conducted a long-term prospective gait analysis study on a cohort of 14 ambulatory patients who were operated on in 1985.

Ten years after surgery, our patients had increased ranges of motion that were within normal limits. Step length was significantly improved, although cadence was unchanged postoperatively and was significantly less than normal age-matched control subjects.

We have recently tracked down all 14 patients from the original cohort and are currently completing a 20-year prospective follow-up analysis of their neuromuscular function and gait. Our preliminary data suggest that selective dorsal rhizotomy is not only an effective method for alleviating spasticity but it also leads to long-term functional benefits ³.

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