

## SS4-2

**Three historical accounts of Gilles de la Tourette syndrome**

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**Objective** To present three literary accounts suggestive of Gilles de la Tourette syndrome, one each dating from the eighteenth, nineteenth and twentieth centuries. To predate the eponymous description (1885).

**Results** Passages describing individuals with features suggestive of Gilles de la Tourette syndrome may be found in: *Life of Johnson* by James Boswell, first published 1791: the eponymous hero, literary critic and lexicographer, Dr Samuel Johnson (1709–1784); *Little Dorrit* by Charles Dickens, first published 1857: the character of Mr Pancks; *Boy: Tales of Childhood* by Roald Dahl, first published 1984, describing a schoolteacher, Captain Hardcastle, encountered by the author in the 1920s. Two are biographical works and feature historical individuals; one is a fictional work but is probably based on observations made in life.

**Discussion** All three accounts suggest the presence of motor and vocal tics, two suggest obsessive and/or compulsive behavioural traits; none describe coprolalia.

**Conclusion** Acute observers of nature, including writers and painters, may record medical conditions without the benefit of specific medical training, sometimes prior to their description by members of the medical profession.

## Hyperbaric oxygenation

## SS5-1

**High dose oxygen facilitates neurorehabilitation**

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A recent article in the *Lancet* stated: the decrease in mortality and improved outcome per patient with severe traumatic brain injury over the past 25 years can be attributed to the approach of squeezing oxygenated blood through a swollen brain. Animal studies and limited clinical trials suggest that early intervention with high-dose oxygen produces favorable results in reduction of mortality and disability. Hyperbaric oxygenation possibly could enhance plasticity as part of neurorehabilitation. Six cases of long-term brain dysfunction will be presented. Each case had baseline single photon emission computerized tomography (SPECT) imaging with sequential imaging during the treatment of hyperbaric oxygenation. The treatments range from 80 to five hundred sessions. All modalities of physical therapy, occupational therapy and speech therapy were re-utilized along with the biofeedback and appropriate nutrition. Long-term patients that had been closeted at home or in a nursing home facility showed considerable improvement with reduction in the amount of care and a better response to physical therapy, occupational therapy, and speech therapy with enhanced plasticity. Hyperbaric oxygenation represents an innovative approach in severe brain injury in patients ranging from Glasgow Coma Scale 3–13. Although hyperbaric oxygenation is not immediately available in many institutions for early use, its ability to enhance neurorehabilitation should be further considered.

## SS5-2

**Hyperbaric oxygenation (HBO): a new therapeutic method in neurology**F. Gerstenbrand<sup>1</sup> and R. Neubauer<sup>2</sup><sup>1</sup>*Ludwig Boltzmann Institute for Restorative Neurology and Neuromodulation, Vienna, Austria* and <sup>2</sup>*Ocean Hyperbaric Neurologic Center, Fort Lauderdale, FL, USA*

In various medical centres experiences with high pressure oxygenation as basic treatment as well as part of a combination of multicomponential therapies are used. The first results of traumatic and anoxic acute brain injuries of different origin in varying degrees of the severity have been published. HBO therapy has yielded encouraging results in cerebral palsy (CP). In acute neurological conditions like traumatic brain injury and acute phase of stroke the influence of oxygen in high concentration is to restore partly damaged neurons in the penumbra, the explanation on damaged nervous tissue like in CP is based on the hypotheses to influence the dendrite system building new neuronal networks. The reason why the HBO method is not used generally in neurology is the fact that not enough publications are available to show positive results on the basis of the evidence-based medicine. The EFNS-SIG on Space and Underwater Neurology, subdivision HBO worked out a check-list system for a data bank. Follow up studies for HBO treatment in CP are based on exact neurological examinations and SPECT controls. The study group incorporated centers in Moscow, Vienna, Antwerp and in the U.S.A., Canada, as well as in Mexico. New study groups for the HBO method in acute neurological conditions using the experience of the monitoring system for CP-patients will be organized.

## SS5-3

**Hyperbaric oxygen at clinical and experimental cerebral energy crisis**H. Wassmann<sup>1</sup>, E. J. Speckmann<sup>2</sup>, C. Greiner<sup>1</sup>, J. Wolfer<sup>1</sup>, C. Schul<sup>1</sup> and B. Fischer<sup>1</sup><sup>1</sup>*Departments of Neurosurgery and* <sup>2</sup>*Neurophysiology, University of Münster, Germany*

**Introduction** In cerebrovascular obstructive, embolic or traumatic lesions of the brain deficit of oxygen leads to an 'energy crisis'. The extent of hypoxia is the most critical factor influencing survival of ischemic neural tissue. Increased oxygen availability to neuronal tissue is the root idea of treatment. We examined in experimental and clinical study the effect of HBO.

**Method** In experiment complete cerebral ischemia was induced using the pulsine model in rats and HBO was given. In a clinical study in stroke or in midbrain injured (MBI) patients a series of HBO was administered. Neurological follow-up and EEG during and after HBO was registered.

**Results** In experimental study survival time of animals treated with HBO was eight-fold higher. The treatment of stroke and MBI patients with HBO showed significant better outcome.

**Discussion** Our experimental studies give evidence that cerebral ischemia in animals is better tolerated under HBO. In a group of stroke and MBI patients HBO proved as a safe and adjuvant therapeutic method against 'cerebral energy crisis'. Existing cerebral penumbra-regions after subarachnoidal haemorrhage were probably positively influenced and need to be assessed in future as an indication for HBO.

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