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Are white matter abnormalities a cause of "unexplained dizziness"?: A retrospective bi-centre study

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Introduction: Although cerebral small vessel disease is a significant contributor to the development of imbalance and falls in the elderly, whether it also contributes to the development of dizziness is not known.
Objective: This study investigated whether white matter (WM) disease is associated with unexplained dizziness.
Methods: A retrospective case analysis was conducted for 125 dizzy patients referred to two neuro-otology tertiary centres in London and Pisa. This study was approved by the local research ethics committee. Specific search criteria of "white matter disease" was applied to databases and patients were divided into 'explained' causes of dizziness (ie benign positional vertigo, orthostatic hypotension, cerebellar ataxias) and 'unexplained' causes of dizziness. White matter hyperintensities (WMH) in MRI (T2 weighted and FLAIR) were blindly rated according to the Fazekas scale.
Results: 61 patients (mean age = 72SD = 7.95 years) in the 'unexplained' group and 64 (mean age = 72.01SD = 8.28 years) in the 'explained' group were recruited. The overall frequency of lesions (Fazekas 1–3) differed between the groups ($p = 0.015$). The frequency of severe lesions (Fazekas 3) was significantly higher in the unexplained group (21%) than in the explained group (5%; $p = 0.005$).
Conclusion: Increased severity of WM abnormalities in cases of unexplained dizziness suggests that such abnormalities are contributory to the development of dizziness. WM lesions may induce dizziness either because patients perceive a degree of objective unsteadiness or by a cortical–subcortical disconnection syndrome.

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The neurophysiological research of Alexander von Humboldt

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Background: Medical research in the second half of the 18th c was characterised by a remarkable dynamism in theory construction and a turn towards hard science. Humboldt's (AvH) contribution to this is overshadowed by his other achievements. He was very interested in the medical research of his time and in contact with well known scientists. Inspired by Galvani's publication of "Animal Electricity" in 1791, AvH conducted numerous neurophysiologic experiments between 1792 and 1797 and published his results in "Experiments on stimulated muscular and nervous tissue" in 1797.
Material and methods: In nearly 4000 tests by means of electrical power he experimented on different animals and also on himself. Having perused his publication and analysed his ideas, methods and results, we discuss some examples and demonstrate his procedures and achievements.
Results: AvH conducted his experiments with utmost skill strictly following the procedure of Observation–Experiment–Formal application of mathematics–Conclusion, which was by no means a common approach in physiology at the time. He often drew precise and far-reaching conclusions of which an essential one was that there was no stable nerve excitability, but that it depended on numerous factors. However, perplexing observations are also discussed, such as the additive nature of his experiments and the absence of a systematic approach.
Conclusion: AvH's work must be seen in the context of contemporaneous schools of medical thought. Being influential in a number of areas, his major achievement was that he pioneered the exact scientific research methodology of the 19th century. His work reflects 19th c medicine in an enlightening way.

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Effects of aerobic training on cognition and brain glucose metabolism in subjects with MCI

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Background: Aerobic training (AT) is a promising intervention for mild cognitive impairment (MCI).

0022-510X/$ – see front matter.

Objective: To evaluate the effects of AT on cognition and regional brain glucose metabolism (rBGM) in MCI patients.
Methods: Subjects performed a twice a week, moderate intensity, AT program for 24 weeks. Assessments with ADAS-cog, a comprehensive neuropsychological battery, and evaluation of rBGM with positron emission tomography with ^{18}F-fluorodeoxyglucose ([^{18}F]FDG-PET) were performed before and after the intervention. Aerobic capacity was compared using the maximal oxygen consumption VO_2 max (mL/kg/min). [^{18}F]FDG-PET data were analyzed on a voxel-by-voxel basis with SPM8 software.
Results: Forty subjects were included, with a mean (M) age of 70.3 (5.4) years and an initial Mini-Mental State Exam score of 27.4 (1.7). Comparisons using paired t-tests revealed improvements in the ADAS-cog (M difference: −2.7 (3.7), $p < 0.001$) and VO_2 max scores (M difference: 1.8 (2.0) mL/kg/min, $p < 0.001$). Brain metabolic analysis revealed a bilateral decrease in the rBGM of the dorsal anterior cingulate cortex (ACC), pFWE = 0.04. This rBGM decrease was negatively correlated with improvement in a visuospatial function/attentional test (rho = −0.31, $p = 0.04$). Several other brain areas also showed increases or decreases in rBGM. Of note, there was an increase in the retrosplenial cortex, an important node of the default mode network, that was negatively correlated with the metabolic decrease in the dorsal ACC ($r = -0.51$, $p = 0.001$).
Conclusion: AT improved cognition and changed rBGM in areas related to cognition in subjects with MCI.

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On the medical and neuropsychiatric phenomena depicted at two famous medieval marian miracle spanish books

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Background: The XIII Century is known for the highest peak of devotion to Holy Mary (Marian Century). We have recently reviewed the neuropsychiatric aspects depicted at the medieval Spanish book "Cantigas de Santa Maria" (Neurology 2015;84:1991-6).
Objective: To report and compare the medical and neuropsychiatric findings in 2 famous medieval books of Marian miracles.
Material and methods: We reviewed all the miracles depicted at the XIII Century books "Cantigas de Santa Maria" (CSM, written in Galician at the court of Alfonso X) and Milagros de Nuestra Señora (MNS), written by Gonzalo de Berceo (ca. 1197–1264), the first Castilian poet known by name and compared the relevant medical, neurological and neuropsychiatric events in both books.
Results: MNS does not have illuminations and at least 9 similar narratives were also found on CSM. Among the 25 miracles reported at MNS, 36% (9/25) included medically relevant facts with 4 additional examples of resurrection and 2 stories describing evil possession. The most common medical/neuropsychiatric subjects included ob/gyn subjects (N = 2), sudden death (MI?), intellectual decline, alcohol intoxication, suicide, infanticide, infections and uncorrupted body after death (N = 1 for each). At the 427 canticles from CSM (353 miracles), 270 medically relevant facts (187 canticles) were found. Possible neuropsychiatric conditions were described in 98 canticles. Blindness and dystonia/weakness/deformities were the most common neurological phenomena. Several examples were also detailed by illuminations.
Conclusion: Medically relevant facts were described in both books. Accounts of neuropsychiatric disorders were more complete on CSM (including illuminations) whether examples on MNS were mostly psychiatric.

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Chasing dizzy chimera: Diagnosis of combined peripheral and central vestibulopathy

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Background and objectives: Diagnosis of combined peripheral and central vestibulopathy remains a challenge since the findings from peripheral vestibular involvements may overshadow those from central vestibulopathies or vice versa. The aim of this study was to enhance the detection of these intriguing disorders by characterizing the clinical features and underlying etiologies.
Methods: We had recruited 55 patients with combined peripheral and central vestibulopathy at the Dizziness Clinic of Seoul National University Bundang Hospital from 2003 to 2013. Peripheral vestibular involvement was determined by decreased caloric responses in one or both ears, and central vestibulopathy was diagnosed with obvious central vestibular signs or the lesions documented on MRIs to involve the central vestibular structures.
Results: Combined peripheral and central vestibulopathy could be classified into four types according to the patterns of vestibular presentation. Infarctions in the territory of anterior inferior cerebellar artery were the most common cause of acute unilateral cases while cerebellopontine angle tumors were mostly found in chronic unilateral ones. Wernicke encephalopathy and degenerative disorders were common in acute and chronic bilateral disorders. HINTS may not detect central lesions in combined vestibulopathy. The dissociation in the abnormalities between the caloric and head impulse tests may suggest a combined peripheral and central vestibulopathy.
Conclusions: Peripheral vestibular signs may overshadow the central ones in combined peripheral and central vestibulopathy. Given the requirements for urgent treatments and potentially grave prognosis of combined vestibulopathy, central signs should be sought carefully even in patients with obvious clinical or laboratory features of peripheral vestibulopathy.

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Recurrent benign paroxysmal positional vertigo: Analysis of 170 patients

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Background: Benign paroxysmal positional vertigo (BPPV) accounts for 20% of the diagnosis in specialized centers. The recurrence after an effective treatment has been reported in 20–50%.
Objective: To assess the rate of recurrence of BPPV and search of related comorbidities.
Patients and methods: Retrospective chart review of 170 patients with recurrent BPPV, analysis of epidemiological characteristics and

the number of canalith repositioning procedures (CRP). The definition of recurrence was any new attack that occurred at least one month after the resolution of the first BPPV. The chi-square test was used to assess the relationship between comorbidities and recurrence BPPV. Statistical significance was defined as $p < 0,05$.
Results: 674 patients had diagnosis of BPPV between 2007 and 2011 in our neurotology unit, 170 (25%) were defined as recurrent BPPV. The mean age was 62 years and 125 (73.5%) were female. Posterior semicircular canal was involved in 89% of recurrences. The media of recurrence was 2.04 BPPV episodes per patient. The number of CRP increased along with patient's age. Regarding the evaluated comorbidities: 43% had arterial hypertension, 37.5% high levels of blood lipids, 30% migraine, 24.2% stroke, 21.2% hypothyroidism, 22% tensional headache, 18.8% head trauma, 14.7% diabetes and 11% smoked. A value of chi squared of 8.12 was calculated for lacunar stroke in patients with recurrent BPPV ($p = 0.004$) and for patients with stroke, was 6.88, $p = 0.009$.
Conclusion: A relationship between microangiopathic damage and BPPV recurrence has been observed, but more studies are needed in order to demonstrate the validity of this hypothesis.

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Microperimetry in the diagnosis of the first manifestation of optic neuritis in multiple sclerosis

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Background: We patented a new method of diagnosis of optic neuritis by microperimetry (Patent RU No. 2548511, priority of 29.11.2013).
Objective: To identify subclinical lesions of the optic nerve at the first manifestation multiple sclerosis.
Methods: The clinic S. Fyodorov Eye Microsurgery, Moscow, examined seven patients with complaints typical for monolateral optic neuritis (ON). RC-5000 Tomey, Cirrus HD-OCT; Humphrey HFA II-750i; Microperimetry on MP-1 (program 12° 10 dB stimulus Goldmann III), MRI of the brain and orbits (Siemens 1.5 Tl).
Results: Visual acuity 7 patients in both eyes 1.0, fundus — unaffected. Intact fellow eye. OCT: retina nerve fiber layer from 88 to 108 nm, and the volume of the retinal ganglion cells 60 to 73 nm. Microperimetry: 4 eyes — a significant decrease in the average sensitivity of 6, 2 to 10, 8 dB and paracentral defects within 0, 2 and 4° from the fixation target, and 3 eyes — a moderate decrease in the average sensitivity from 15.2 to 16.8 dB, paracentral defects within the 2, 4, 6°, preferably in the upper quadrant. MRI in all patients: periventricular, subcortical, multiple foci size of 0.3–0.7 cm, some with signs of perifocal edema in the form of activity. Neurologist diagnosed with multiple sclerosis was confirmed.
Conclusions: Method microperimetry revealed paracentral defects in cases of subclinical lesions of the optic nerve. In all cases had been diagnosed with multiple sclerosis. Microperimetry — informative method for diagnosis of subclinical lesions of the optic nerve at the first manifestation of multiple sclerosis.

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Clinical and neuro-ophthalmologic predictors of visual outcome in idiopathic intracranial hypertension (IIH)

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Background: Once thought benign, IIH is now recognized as a potentially vision devastating entity. Predictors of worse outcome may aid in appropriate management of patients of IIH.
Objective: To assess visual morbidity in patients of IIH in terms of clinical and neuro-ophthalmologic parameters.
Methods: In a prospective study of 40 patients of IIH, clinical and neuro-ophthalmologic parameters were noted. All parameters were graded using objective criteria and compared with final visual outcome of patients to determine any correlation.
Results: Presence of headache and transient visual obscurations (TVOs) at presentation was significantly associated with good visual outcome. Higher CSF opening pressure, Increased Retinal nerve fibre layer (RNFL) thickness (>178 μm) on optical coherence tomography, abnormal contrast sensitivity at high frequency and prolonged P100 latency on visual evoked potential (VEP) were associated with poor visual outcome. No definite correlation between presence of cranial nerve palsies, other clinical features, obesity, grade of papilledema and findings on neuroimaging with final visual outcome was established.
Conclusion: Visual Outcome in patients of IIH can be predicted at presentation by various parameters providing window for early and adequate treatment. High Body mass index, high CSF opening pressure, greater RNFL thickness, abnormal VEP or contrast sensitivity are some of the alarming signs for physicians necessitating need for aggressive monitoring and management. On the contrary, presence of headache or TVOs at presentation may predict a better visual outcome. Close follow up of the patients with respect to the neuro-ophthalmologic parameters as described may help in segregating the potential candidates for aggressive management early in the disease course.

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