

**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  $^{18}\text{F}$ -fluorodeoxyglucose ( $^{18}\text{F}$ FDG-PET) were performed before and after the intervention. Aerobic capacity was compared using the maximal oxygen consumption  $\text{VO}_2$  max (mL/kg/min).  $^{18}\text{F}$ 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  $\text{VO}_2$  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),  $p\text{FWE} = 0.04$ . 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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Mixed Topics 3

**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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Mixed Topics 3

**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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Mixed Topics 3

**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