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Dipolar source modeling of contact heat evoked potentials (CHEPs) to both hand and foot stimulation

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To the best of our knowledge, the CHEP sources to foot stimulation have never been studied. The aim of the present study was to calculate the dipole source models explaining the scalp distribution of CHEPs to both hand and foot stimulation. Nine healthy subjects were recruited. CHEPs were recorded form 31 scalp electrodes to stimulation of the right hand and foot. The brain electrode source analysis (BESA) was used to calculate the dipole models. A five-dipole model could explain the CHEP scalp topography, independently of the stimulation site. It included a bilateral source on the opercular region, corresponding to the SII area, a midline source, approximately located in the anterior cingulate cortex, and a bilateral deep source in the insular region. When we tried to add a further source, located in the cerebral region of the SI area, it did not activate and the model residual variance did not improve. Our results show that the sources subtending scalp CHEPs to both hand and foot stimulation are the same as those explaining the LEP topography (Valeriani et al., 2000). Moreover, as for LEPs, SI dipole does not need to be included in the CHEP dipole source model.

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Small fiber impairment in patients with Fibromyalgia: a neurophysiological and skin biopsy study

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Fibromyalgia (FM) is a disorder of uncertain origin associated with widespread pain, tenderness, muscular spam, fatigue, sleep disturbance and cognitive dysfunction. A dysfunction of pain processing at central and peripheral level was reported. In this study we aimed to explore the presence of signs of impairment of the peripheral nervous system in a cohort of patients with FM. Fifty-one FM patients underwent Laser Evoked Potentials (LEPs) and sympathetic skin response (SSR) by the right hand, knee and foot and skin biopsy from the right thigh and right ankle. In 15 (29%) patients we found alterations of LEPs in at least two of the 3 stimulated seats (hand, knee, foot). The SSR was impaired in 15 patients by stimulation of the hand, in 9 patients for both stimulated sites. Epidermal density was reduced in 46 (90%) patients and in 41 of these there was only an interest in the proximal site. In 5 subjects (10%) neurophysiological evaluation and skin biopsy were normal. Skin biopsy in patient with FM reveals a prominent peripheral nervous system involvement in FM patients with a prevalent picture of non-length-dependent sensory neuropathy.

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Altered short-term visual paired associative plasticity in migraine patients between attacks

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In healthy volunteers (HVs), we recently observed that the rules of the time-dependent paired-associative plasticity found in the sensorimotor system are valid also for the visual system. With the latter method, here, we have tested whether dysfunctioning associative plasticity might characterize the visual system in patients with episodic migraine without aura (MO), where abnormalities in both inhibitory and excitatory paired-associative sensorimotor plasticity have been observed between attacks (1). In 11 MO between attacks and in 14 HVs, we performed a visual paired associative stimulation (vPAS) protocol by coupling 90 black-and-white checkerboard reversals with low-frequency TMS pulses over the occipital cortex at 2 inter-stimulus intervals in separate sessions by subtracting or adding 25 ms to the visual evoked potential (VEP) P100 latency. We recorded VEPs (600 sweeps) before, after, and 10-min later each vPAS session. VEPs were partitioned in 6 blocks of 100 sweeps. We analysed VEP N1-P1 first block amplitude and delayed habituation. While vPAS-25 significantly enhanced and vPAS + 25 reduced VEP amplitude habituation in HVs, they both did not significantly change VEP amplitude habituation in MO between attacks. We provide evidence for lack of excitability depressing and enhancing short-term associative plasticity mechanisms within the visual system in interictal migraine.

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