Migraine aura and photosensitive epilepsy: what's the link?

Migraine and epilepsy are frequent, paroxysmal and chronic disorders. In various ways they are clearly different diseases, although presenting with clinical signs with similar characteristics regarding motor deficits, sensory and alterations of consciousness. Migraine can follow a seizure, post-ictal headache, more rarely can provoke it. Photosensitive epilepsy is a kind of reflex epilepsy, triggered by light stimuli, of which we the genetic component has been established. Besides the genetic factor, an abnormal reactivity of the occipital visual cortex has been suggested. Migraine aura is manifested by visual warning signs, such as blurring, flash, dark spots in the visual field, followed by pain. As well as for the photosensitive epilepsy, even for the migraine with aura, studies have been and are conducted, concerning the influence of genetic connotation, such as the discovery of Familial Hemiplegic Migraine. In literature some cases of epilepsy have been reported, triggered by migraine and have been named as migralepsy. These reported cases have been related to certain ranges of age, mainly young people. Recently, some researchers reported a case of late-onset photosensitive epilepsy in a migraine aura patient, with motor disorders of hemiplegic type.

Practically, a migraine adult subject ever suffering from epilepsy, began to develop late-onset photosensitive epileptic seizures, both partial and generalized. Electroencephalogram revealed paroxysmal activity during intermittent photic stimulation, while brain CT-MRI showed normal results. The administration of antiepileptic therapy with sodium valproate was effective on seizure control. This case is singular for the association of migraine aura with hemiplegia and late-onset photosensitive epileptic seizures, not yet reported in the literature. In addition, the reported case did not belong to Familial Hemiplegic Migraine. The question is: which the pathogenetic mechanism underlying this event? The comorbidity of both disorders, migraine and epilepsy is an important link that needs further studies. Actually, it is believed that an initial neuronal hyperactivity, originating from the occipital cortex, in migraine leads to cortical spreading depression and aura, with the subsequent recruitment of the trigeminal vascular system leading to central sensitization and pain. In epilepsy, neuronal hyperactivity leads to the recruitment of larger populations of neurons firing in a rhythmic way, creating an epileptic seizure. So, migraine aura and headaches may act as a trigger for epileptic seizures.

The hypothesis that a hyper-excitable visual cortex can activate a mechanism capable of causing, through the involvement of cortical spreading depression, responsible for the visual-hemiplegic aura and then, through the trigeminal circuits, initiating a cascade of events, leading to migraine pain appears the most suggestive. With regard to late-onset seizures in hemiplegic migraine, it can also assume that, for the comorbidity of diseases, hyperexcitability of occipital cortex may be responsible for migraine symptoms, subsequently activating the photosensitivity, responsible at a later time for epileptic seizures. Definitely, late-onset photosensitive epilepsy migraine-related is a very rare condition and the link between two diseases can be explained by common occipital cortex hyperexcitability.

Domenico Chirchiglia
Neurophysiopathology Unit, Department of Neurosurgery, University of Catanzaro "Magna Graecia",
Viale Europa, Germaneto, Catanzaro, Italy

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