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Editorial

New - Onset Epilepsy in Old Age: An Inevitable Increase

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Abstract

New-onset epilepsy in the elderly is caused by two types of cerebral lesions: the first concerns acute brain lesions such as tumors or cerebrovascular disorders. The second includes stabilized, chronic lesions, such as cortico-subcortical atrophy, gliosis, porencephaly, Encephalomalacic cavities. They're all related to the result of cerebral insults.

The literature shows substantial percentages, up to 30% of new-onset epilepsy in old people due to chronic lesions, which suggest that these lesions are not well-known. An interesting aspect concerns the comorbidity of late epileptic disorder of the elderly with psychiatric illnesses that often creates confusion between the disorders for which epileptic episodes are often misdiagnosed. It is estimated that new-onset epilepsy is increasing for both acute brain lesions and chronic lesions, the surprising fact concerns the growing number of new-onset epilepsy cases secondary to chronic brain lesions in old people. This is a growing trend because the average age of life is increasing. Therefore, the elderly's epilepsy is destined to increase for the increase of the age of life.

Keywords: Elderly Epilepsy; New-Onset Epilepsy; Cerebral Atrophy

Editorial

Symptomatic epilepsy increases with age increase, thus being the new-onset epilepsy of the elderly. Epileptogenic lesions typical of the adult are represented by tumors, cerebrovascular malformations, ischemic and hemorrhagic stroke, and post-traumatic insults [1]. These lesions are cause of new-onset epilepsy in adults, revealing acute or subacute evolutive lesions. There are also chronic epileptogenic brain lesions, such as cortical-subcortical atrophy, gliosis, porencephalic and Encephalomalacic cavities, cerebrovascular and post-traumatic brain injury outcomes, constituting cause of new-onset epilepsy in the elderly [2,3].

Studies on epilepsy in older people by chronic lesions are very few, while the cases of epilepsy secondary to acute lesions in the elderly are more studied. Some authors report a percentage of such epileptogenic lesions, going from a range of 4% to 31%, average 17, 50% [1,4]. Nguyen reports lesions included acquired insult outcomes about 62% including 17% of cortico-subcortical atrophy, encephalomalacia-gliosis (29%), vascular malformations outcomes (16%), while new-onset epileptic seizures represented by tumors are about 29% and vascular malformations about 16% [1,5]. These are interesting data, which show the prevalence of chronic epileptogenic lesions in the elderly compared to epileptic seizures caused by acute cerebral disorders. Then, new-onset epilepsy in the elderly caused by chronic lesions is often difficult to diagnose, since in older patients it can be unwitnessed or present with atypical symptoms, especially due to the association with frequent coexistence with cognitive diseases. We studied chronic epileptogenic lesions in old people, obtaining the following results: a survey of 150 old people is reported, aged 65 - 82 years (mean age 73, 8), 92 males, 58 females. Brain CT and MRI had shown mainly atrophic lesions in 130 patients, malacic areas in 7 patients, as outcomes of surgical procedures to hemorrhagic accidents and tumors, gliosis in 13, as post-traumatic brain injuries and infectious diseases outcomes. Epileptic seizures were reported in 45 subjects, about 30 % of all, 30 of which manifested generalized seizures, 15 partial seizures. Particularly, partial seizures developed between malacic outcomes. Electroencephalogram showed paroxysmal activity only in 10 patients, while slow wave activity was found in the remaining. AED treatment was started, using levetiracetam first choice drug in both partial and generalized seizures, Results were good, regarding the control of seizures and none of patients experienced side-effects from AEDs.

We have found a high percentage of epilepsy in patients examined, having considered the 30% an interesting result compared with the literature data. It is a percentage which makes this type of epilepsy in old people a not well known condition.

But what are the chronic epileptogenic lesions that create new-onset epilepsy in the elderly? A brief review:

Cortico-subcortical atrophy: it is considered a major cause of epilepsy in the elderly, with both partial and generalized seizures. Neuroimaging techniques show atrophic cerebral lesions changes in gray matter and white matter. The grey matter shows a dilation of the sulci and the fissures, while the white matter shows small MRI hyper intensities. Pathological findings in regions of white matter as hyperintensity include myelin pallor, tissue rarefaction associated with loss of axons.

Gliosis: it is another finding, as a reactive change of glial cells in response to damage to the central nervous system, leading to the formation of a glial scar. It is thought that the glial scar limits edema and prevents neuronal regeneration in the CNS by blocking regenerating axons from entering the damaged areas. Gliosis causes the release of cytokines, growth factors, and extracellular matrix proteins, which may be involved in immune response, neuroprotection, or possible further damage. The term "reactive gliosis" normally refers

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to massive hypertrophy of astrocytes; however, it is apparent that gliosis is inherently reactive. Gliosis is considered as a result of many pathologies of central nervous system, such as traumatic, ischemic, hemorrhagic lesions.

Encephalomalacia: it is a term describing loss of brain parenchyma, ending result of its necrosis following ischemic and hemorrhagic events, traumatic brain injury, and surgical procedures outcomes. The term is often used to describe blurred cortical margins and decreased consistency of brain tissue. Cystic cavities are formed in correspondence of the damaged area, both of small and large size. Multicystic encephalomalacia refers to the formation of multiple cystic cavities of various sizes in the cerebral cortex of neonates and infants following injury, most notably perinatal hypoxia-ischemic events. Encephalomalacic areas are considered highly epileptogenic [6-8].

An interesting aspect of the elderly epilepsy by chronic lesions concerns the psychiatric comorbidity [7]. Depression, psychotic disorders, confusion, agitation are symptoms that can misdiagnose epileptic seizures, being this one of the reasons why they are undervalued. Electrophysiological investigations such as electroencephalogram and brain MRI are very useful, respectively; to reveal the presence of signs of epilepsy, although often the electroencephalogram does not show any critical signs, either to find parenchymal signs of neuronal cell necrosis. Epilepsy in the elderly thus is in considerable increase not only for the acute brain injuries but also for the chronic ones, which are increasing for the increase of the age of life.

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