Clinical-Radiological Differences in Hyperkinetic Movement Disorders associated with Acute and Chronic Cerebrovascular Disease

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Background and Objective

Cerebrovascular disease (CVD) is one of the principal cause of movement disorders (MD) and hyperkinetic MD emerge in about 4% of stroke cases, being reported acutely or chronically as delayed-onset progressive MD.[1] However, association between stroke localization and phenomenology is still less than 30%.[2] Aim of the study is to evaluate differences in hyperkinetic MD in patients with acute and chronic CVD.

Methods

Patients with hyperkinetic MD and evidence of CVD on MRI were enrolled. Patients were divided into two groups according to onset of associated cerebrovascular events.

Results

Thirty-three patients (18 men, 54.5%) with hyperkinetic MD associate with CVD, mostly ischemic (90.1%), were enrolled. Out of these, the first group was composed by 9 patients (27.3%) who presented cerebral stroke preceding MD. The second group was composed by 24 patients (72.7%) with chronic CVD, characterized by subcortical white matter and basal ganglia lesions.

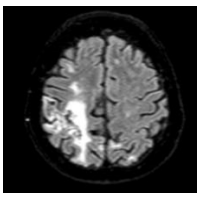
The most observed hyperkinetic MD in both acute and chronic groups were tremor (55.6% vs 25%) and dystonia (33.3% vs 45.8%), followed by chorea, ballism and myoclonus. No differences between groups were observed. Upper limbs localization of MD was more frequent in the acute group (100% vs 62.5%; p=0.038), while cranial onset was more frequent in the chronic group (75% vs 22.2%; p=0.013).

Table 1. Demographic, radiological and clinical features of MD sample.

	Chronic HMD (N=24)	Acute HMD (N=9)	p-value
Age at MD onset (mean)	63.8	65.9	n.s.
Type of cerebrovascular event			
Ischemic (%)	23 (95.8)	7 (77.8)	0.06
Hemorragic (%)	1 (4.2)	3 (33.3)	
Stroke Localization			
Cortical (%)	2 (8.3)	8 (88.9)	**0.0001**
Subcortical WM (%)	23 (95.8)	6 (66.7)	**0.0523**
Basal Ganglia (%)	10 (41.7)	2 (22.2)	0.4184
Brainstem (%)	8 (33.3)	1 (11.1)	0.383
Cerebellum and ped. (%)	3 (12.5)	2 (22.2)	0.5971
Unilateral Stroke Localiz (%)	6 (25.0)	7 (77.8)	**0.0135**
Type of HMD			
Tremor (%)	6 (25.0)	5 (55.6)	0.121
Dystonia(%)	11 (45.8)	3 (33.3)	0.6982
Chorea (%)	6 (25.0)	0 (0)	0.1557
Ballism (%)	2 (8.3)	2 (22.2)	0.2952
Myoclonus (%)	5 (20.8)	2 (22.2)	1
Stereotypes (%)	2 (8.3)	0 (0)	1
Associat. Parkins. (%)	3 (12.5)	3 (33.3)	0.3092
MD Localization			
Cranial (%)	18 (75.0)	2 (22.2)	**0.0135**
Neck/Trunk (%)	8 (33.3)	3 (33.3)	1
Upper limbs (%)	15 (62.5)	9 (100)	**0.0386**
Lower limbs (%)	15 (62.5)	3 (33.3)	0.2395
Evolution			
Worse (%)	15 (62.5)	6 (66.7)	1
Stable/better (%)	0 (0)	2 (22.2)	0.0682

Note: sig. p values in bold. Fisher exact test has been applied to test differences between frequencies. HMD: Hyperkinetic MD.

Regarding MRI vascular lesions, cortical areas were more affected in acute group (88.9% vs 8.3%; p<0.001), mainly unilaterally (77.8% vs 25%; p=0.013), while subcortical white matter lesions were mainly observed in chronic group (95.8% vs 66.7%; p=0.05). Basal ganglia were involved in 22.2% of the acute patients vs 41.7% of the chronic patients, while brainstem in 11.1% vs 33.3% and cerebellum in 22.2% vs 12.5%.



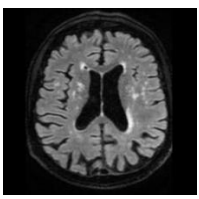


Figure A.
Woman, 76 years old. Holmes' Tremor at acute onset involving left upper limb in patient with right parietal cortical ischemic stroke.

Figure B.
Man, 76 years old. Choreic movements involving lower limbs and oro-facial district in patients with chronic CVD and lesions in RMI of subcortical white matter and basal ganglia. Genetics for HD: negative.

Conclusions

Hyperkinetic MD in patients with acute cerebrovascular event seem to have stronger correlation with cortical lesions than patients with chronic CVD, principally affecting upper limbs.

References

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