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Frequency and functional recovery of subjects with "critical illness polyneuropathy" in neuro-rehabilitation

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Introduction

Critical illness polyneuropathy (CIP) is a motor-sensory axonal neuropathy that affects intensive care unit (ICU) patients and is characterized by symmetrical limbs weakness (1). Incidence in ICU has been variably reported ranging from 45 to 80% following sepsis and systemic inflammatory pictures (2). Its occurrence in neuro-rehabilitation is unknown, even if ICU subjects are generally admitted in this setting. The aim of present study was to investigate CIP frequency in neuro-rehabilitation and the functional recovery of subjects with CIP.

Method

Subjects admitted to neuro-rehabilitation from January 2014 to March 2016 were prospectively investigated and those coming from ICU were enrolled. Subjects suffering from neuromuscular disturbances, history of pre-existing polyneuropathy, brain lesions with GCS > 8, and those with premorbid neurological related disability were excluded. All patients underwent electromyography (EMG), at admission. Functional outcome was ascertained by Glasgow outcome scale (GOS), modified Rankin scale (mRS) and Barthel scale (BS), at admission and at discharge. The length of stay (LOS) was also recorded.

Results

One hundred fifty-six patients were investigated and 129 (53 F, 76 M, mean age 54.7±18.3) enrolled. The most of patients (91.4%) had severe acquired brain injury (sABI). Fifty-one (39.5%) (13 F, 38 M, mean age 57±15.3) patients showed CIP to EMG (figure 1).

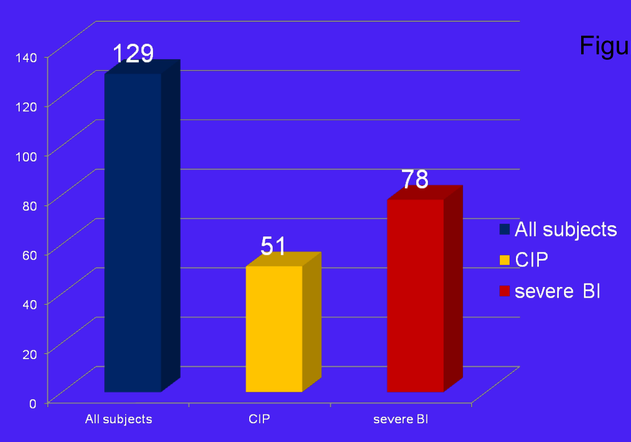
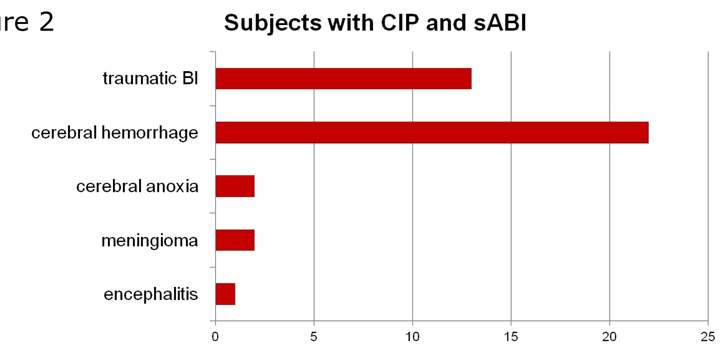


Figure 1

Of these, 40 (31%) subjects had overlapping CIP and sABI (CIP+sABI): 13 patients with traumatic brain injury, 22 with cerebral hemorrhage, 2 with cerebral anoxia, 2 with meningioma and one with encephalitis (figure 2). Respiratory failure and sepsis was primary etiology in isolated CIP subjects. Twelve patients (9.3%) died: 4 and 8 subjects with and without CIP, respectively.

Figure 2



All patients showed functional improvement after rehabilitation: 2.8±0.3, 4.9±0.1, and 2.3±7.9; 3.5±1.1, 3.7±1.4, and 50±3.8 to GOS, mRS and BS, at admission and at discharge, respectively. Subjects with CIP+sABI had significant poorer functional outcome than those without CIP: 3.1±1, 4.3±1.1, and 31.5±33.4; 3.6±1.2 ($p< 0.02$), 3.5±1.5 ($p< 0.004$) and 55.7±38.6 ($p< 0.002$) to GOS, mRS and BS, respectively (table). Significant higher LOS in CIP+sABI than sABI subjects was observed: 106.6±58 vs 66.8±53.7 days ($p<0.0001$), respectively.

Functional outcome	Category	All subjects (N=129)	sABI only (N=78)	CIP and sABI (N=51)	Baseline comparison	Comparison between groups*
GOS	At admission	2.8±0.3	2.9±0.3	2.7±0.4	0.419	0.320
	At discharge	3.5±1.1	3.6±1.2	3.1±1		
	Comparison within groups#	<0.001	<0.001	0.068	---	---
mRS	At admission	4.9±0.1	4.9±0.2	4.97±0.1	0.989	0.093
	At discharge	3.7±1.4	3.5±1.2	4.3±1.1		
	Comparison within groups#	<0.001	<0.001	0.016	---	---
BS	At admission	2.3±7.9	2.5±8.2	2±7.3	0.65	
	At discharge	50±3.8	55.7±38.6	31.5±33.4		
	Comparison within group	<0.001	<0.001	<0.001		

GOS = Glasgow outcome scale; mRS = modified Rankin Scale; BS = Barthel Scale; CIPNM: critical illness polyneuropathy and myopathy; aBI: acquired brain *this test whether changes of functional outcomes between admission and discharge were differential between groups; # this test whether changes of functional outcomes between admission and discharge were significantly different from zero within all patients and within each group

Conclusions

CIP was fairly common in subjects admitted in neuro-rehabilitation as 39.5% had this disorder. One third of sample had overlapping CIP and sABI. Although it has been reported that functional recovery of subjects with CIP is good (3), those with CIP and sABI showed longer LOS and poorer functional outcome than subjects without CIP. New rehabilitative strategies should be planned in treating these subjects.

References:

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