Service Priorities and Programmes

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Submitting author: Ms Kiu Chor CHAN
Post title: Occupational Therapist I, Tai Po Hospital, NTEC

Clinical Determinants of Cognitive Dysfunction in Subacute Stroke

Chan KC
Occupational Therapy Department

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Introduction

Cognitive dysfunction is a common sequela of stroke and is often associated with impaired function and adverse long term outcomes. Identification of post-stroke cognitive impairment (PSCI) in rehabilitation settings facilitates early intervention to enhance cognitive functioning in subacute stroke.

Objectives

(1) To investigate the frequency of cognitive impairment and its clinical determinants; (2) to evaluate the cognitive profile of patients with PSCI.

Methodology

From May 2012 to December 2012, the Mini-Metal State Examination (MMSE) was administered to consecutive patients with stroke on admission to Tai Po Hospital for stroke rehabilitation. Patients were determined to have PSCI with the MMSE scored below 19. Patients' functional outcome was measured by Modified Barthel Index (MBI) score.

Result

Of 216 patients (mean MMSE=18.60, SD=7.08; range 4-30), 105 (48.6%) were indicated to have PSCI of whom 25 (23.8%) had severe cognitive impairment with MMSE scored <10. Cognitively impaired patients were older (mean age, 76.6 versus 66.5 years, $p<0.01$) but no sex differences. They were more frequent to have confused mental state (36.2% versus 0.0%), left hemispheric lesions (51.1% versus 30.1%), lower level of education (49.5% versus 19.2% received no formal education), hemorrhagic stroke (25.0% versus 13.6%), preexisting dementia (5.7% versus 0.0%), lower premorbid functioning, in which 19.0% versus 2.7% were old aged home residents and 27.6% versus 5.4% required assisted living (Chi-square tests, $p<0.05$) and got lower MBI score on admission (mean MBI= 36.4 versus 56.1, $p<0.01$). Multivariate logistic regression suggested that older age (odd ratio (OR)= 1.04, $p=0.045$, hemorrhagic stroke (OR=3.53, $p=0.014$), left hemispheric lesions (OR=2.18, $p=0.046$), lower level of education (no formal education: OR= 14.08, $p<0.01$; primary education level: OR= 4.68, $p<0.01$) and admission MBI score <50 (OR= 8.63, $p<0.01$)

were significant determinants of PSCI. Among the cognitively impaired patients, approximately one-third of them were disorientated to time and place, 58.1% failed the “serial 7 subtraction” subtest, 60% failed to recall the 3 words, 84% failed to follow 3-steps verbal commands, 97.1% failed the “visual construction” subtest and they got lower post-stroke functional status (mean discharge-MBI= 49.7 versus 74.8, $p<0.01$) and higher institutionalization rate (44.8% versus17.6%; $X2=17.77$, $p<0.01$). Conclusions Cognitive dysfunction occurs in approximately half of the stroke patients in rehabilitation setting and is associated with lower functional outcome and higher institutionalization rate. Older age, hemorrhagic stroke, left hemispheric lesions, lower level of education and lower functional status on admission are significantly associated with post-stroke cognitive impairment.