Hong Kong Association of Rehabilitation Medicine Newsletter

Hong Kong Association of Rehabilitation Medicine

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New president and council members have been elected in last Annual General Meeting held on 18th December 2008. On behalf of our members, we would like to express our gratitude to our ex-president, Dr Chui Tak Yi for his excellent leadership and dedications. We congratulate our new president, office bearers, and new council members. Besides, we have a new editorial board member, Dr Gloria Cheung who is currently a specialist of rehabilitation medicine working in Heaven of Hope Hospital. Welcome Gloria for joining us.

Editorial board

President's message

Dr KP Leung

It gives me great pleasure to write to you at the start of 2009. It is an honor and a privilege to be elected as the new Chairperson and be able to serve you in the coming 2 years till 2010. I hope that you will give me and our new Council members your fullest support so that together we will achieve the missions and objectives of our association.

HKARM has come a long way in these 12 years, from a small professional society, to one of Hong Kong's main professional bodies. It has survived and developed because of the dedication and support of a great many people. We now have over 108 members, who come from all regions and different health disciplines of Hong Kong.

I appreciate and want to thank all the past presidents along with the current and past council members of the HKARM for all of their past and future contributions to our association. They are owed a sincere debt of gratitude. Particular thanks must go to our immediate past president Dr TY Chui who has accomplished a lot in his term of service and help to redefine the missions and objectives of our association.

The growth of Rehabilitation Medicine as a specialty has been slow in Hong Kong. I wish the turning over of the calendar year would bring promising changes. There are a lot of challenges in front of us and the main one, no doubt is how to promote the status and enhance the recognition of the rehabilitation profession.

We all agree that there is no short cut except to develop and advance our skills and knowledge, which are unique in our rehabilitation specialty. So let us all join hands to ensure that the profession moves forward and address the challenges that lie ahead.

Academic Column

Stroke Related Cardiac Autonomic Dysfunction

Disturbances of the autonomic nervous systems are common in patients with cerebrovascular accident. They are attributed to damage of the central autonomic network[1]:

1 Frontoparietal cortical area
2 Brainstem
3 Autonomic pathways descending from the hypothalamus via the mesencephalon, pons and medulla to the spinal cord

Figure 1:

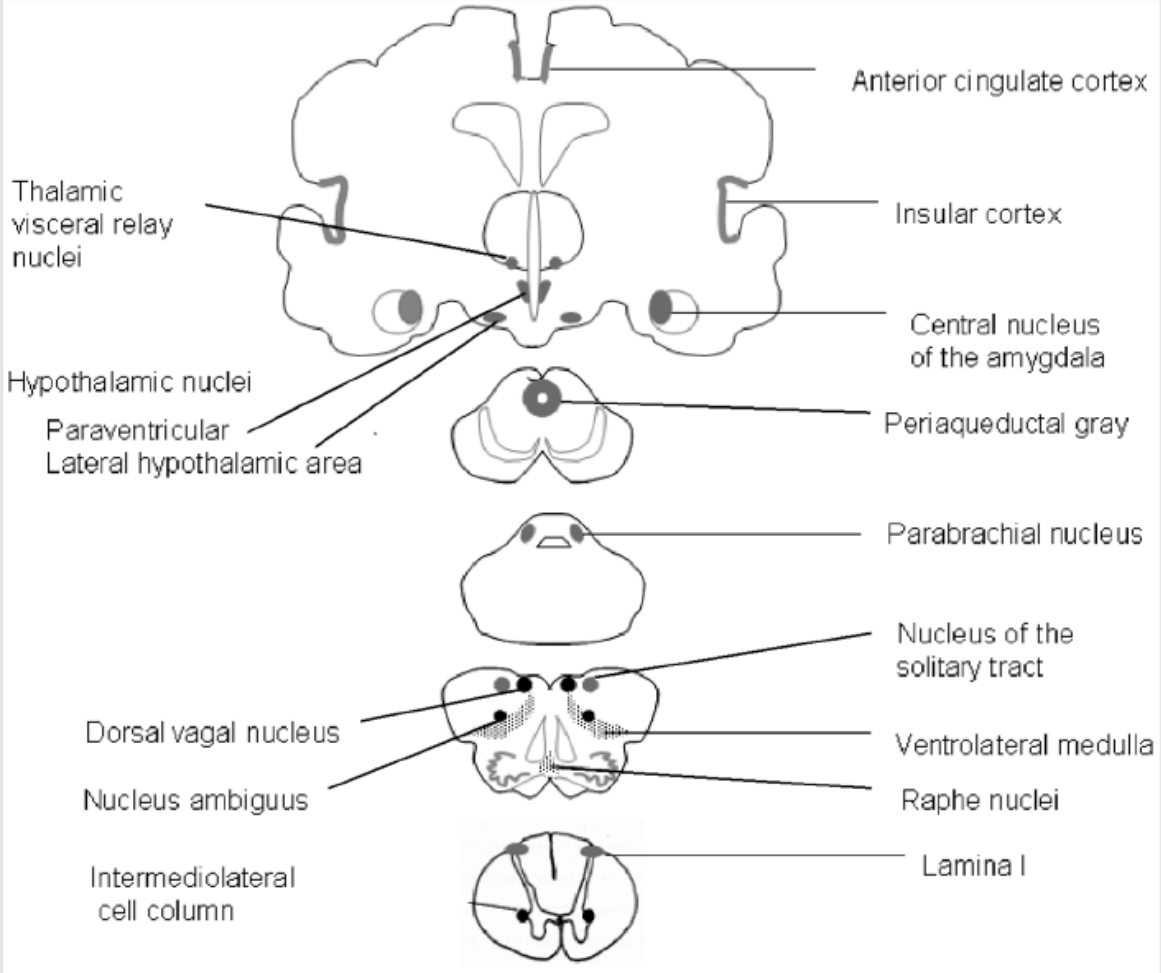


FIGURE 1-5 Components of the central autonomic network.

The most common clinical problems include abnormalities in heart rate and blood pressure regulation, reflecting cardiovascular autonomic dysfunction and asymmetric sweating with cold hemiplegic limbs reflecting changes in the sudomotor and vasomotor regulatory systems[1].

Stroke has been associated with changes in autonomic cardiac dynamics, cardiac arrhythmias, myocardial damage, increased plasma catecholamines and increased susceptibility to sudden death. Cardiac death is common after stroke but cannot be entirely explained by concomitant coronary artery disease. Previous study demonstrated brain injury alone may contribute directly to the generation of cardiac dysfunction[2-6].

Several animal and human studies have shown that the insula cortex is a site for integration of sensory, autonomic and limbic functions through its reciprocal connections with principal sensory and paralimbic areas with hypothalamus and the orbital, temporopolar and cingular cortices. The insular is involved in cardiac autonomic regulation in many species including man[8-13]. Insular lesions are associated with elevation of nocturnal blood pressure and norepinephrine levels, indicating increased sympathetic activities. In additions these patients showed an increased QTc prolongation and incidence of ventricular arrhythmias.

Sympathetic responses in the heart can be elicited by stimulation of both right and left and anterior and posterior insulae but to a different degree. Oppenheimer et al in 1992[12] have demonstrated functional laterality in humans, such that stimulation of the left insular cortex tends to cause predominate parasympathetic and right anterior insular cortex cause a predominate sympathetic responses. It has also been suggested that the anteroventral insula has extensive interconnections with limbic structure and therefore, stimulation of this site causes more pronounced increases in heart rate and blood pressure than posterior insula. Lesion in right posterior, superior and medial insula might cause disinhibition of anterior insula hence cause an enhanced cardiac sympathetic activity[12]. There is an indication that left insular stroke may be accompanied by decreased parasympathetic tone, increased cardiac sympathetic tone and decreased heart rate variability.

The involvement of both left and right insular cortex and more recently right inferior parietal lobe in stroke have been advocated in several studies to be associated with adverse cardiac outcomes as a result of a shift of autonomic function toward augmented cardiac sympathetic tone. It is termed “neurogenic stunned myocardium, a phenomenon of reversible globally diminished myocardial wall motion in association with acute neurological events.[2,14]

Figure 2:

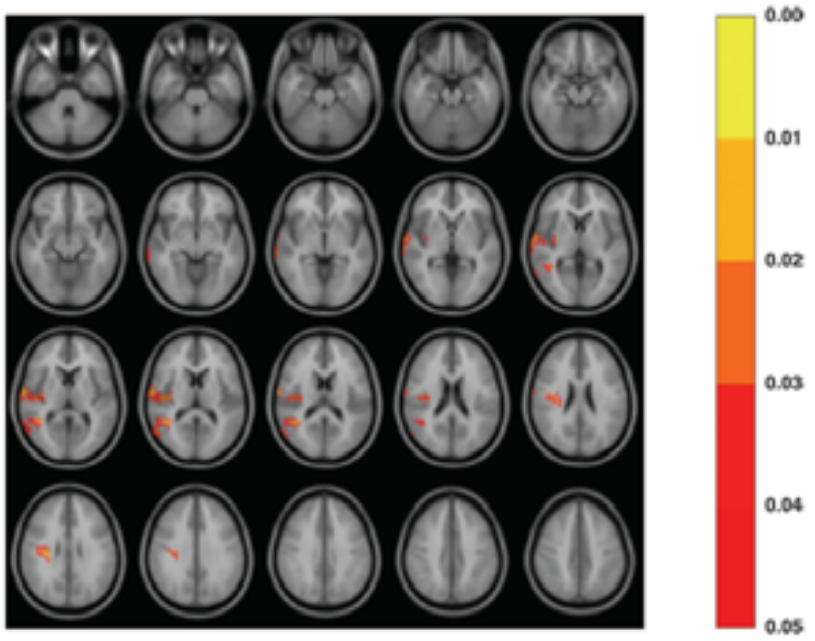
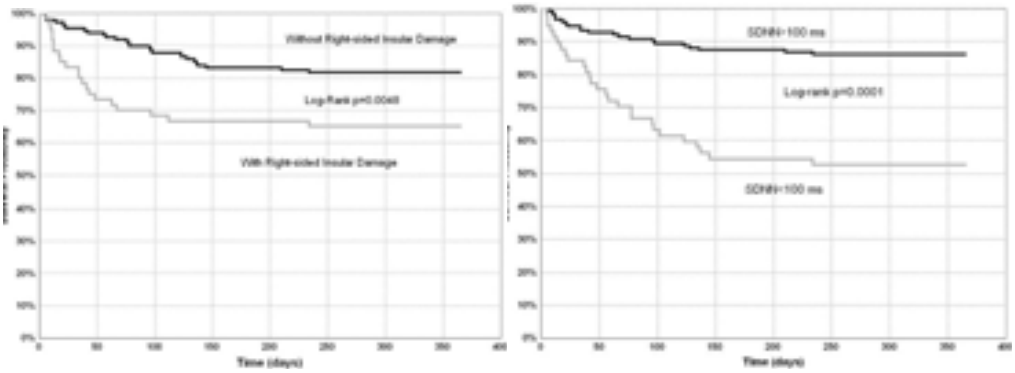


Figure. Voxel-by-voxel map of cerebral sites that are associated with cardiac troponin T (cTnT) elevation in patients with ischemic stroke. Highlighted regions represent voxels linked to cTnT elevation with a p value of <0.05. The color bar indicates voxel-wise p values.

According to a recent study (NOMAS) involving 655 first ever ischaemic stroke patients about 6.7% of them had fatal cardiac events. Relative risk for patients with left side infarct without previous coronary artery disease for adverse cardiac outcome (cardiac death, MI, angina or CHF) was 4.06[2]. A previous study in 2005 demonstrated right insular damage and associated lowered SDNN (Standard Deviation of Normal to Normal RR interval) value was associated with a HR of 2.01 and 3.32 respectively for 1 year mortality[15].

Graph 1:



Studies have demonstrated reduced heart rate variability[3] or impaired cardiac baroreceptor sensitivity[16] is associated with unfavourable functional outcome (assessed by Barthel Index and Rankin Scale Score) at 60 days and increased mortality (HR of 4.5). It has been demonstrated that lower values (SDNN) is associated with poorer functional outcome. Patients with SDNN of less than 100ms were significantly more likely to experience an unfavourable rehabilitation outcome (with OR 9.67) at 60 days[17].

Table 1:

Table 3 Independent predictors for dependency after 60-day rehabilitation program

Variable	OR (95% CI)	*P*-value
Age (per year)	1.09 (1.04–1.19)	0.002
NIH stroke scale score (per unit)	1.12 (1.01–1.34)	0.004
BI score (per unit)	0.92 (0.87–0.98)	0.01
RS score (per unit)	3.88 (2.13–7.56)	0.02
SDNN < 100 ms	9.67 (2.58–18.67)	0.006

OR, odds ratio; CI, confidence interval; SDNN, standard deviation of all normal-to-normal RR intervals; NIH, National Institute of Health; BI, Barthel Index; RS, Rankin Scale.

Cardiovascular autonomic dysfunction after stroke has an important implication on rehabilitation outcome, prognosis and mortality. Sympathovagal imbalance could put post stroke patients at an increased risk for malignant cardiac arrhythmia during rehabilitation. Assessment of heart rate variability before embarking rehabilitation might be useful for risk stratification so closer monitoring can be instituted during active rehabilitation in this group of patients.

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15. Furio Cloivicchi et al, Prognostic implications of right sided insular damage, cardiac autonomic derangement and arrythmias after acute ischaemic stroke, Stroke; 36:1710-15

16. Thompson G et al, Cardiac baroreceptor sensitivity predicts longterm outcome after acute ischaemic stroke, Stroke 2003; 34: 705-12

17. Bassi A et al, Cardiac autonomic dysfunction and functional outcome after ischaemic stroke, European Journal of Neurology 2007; 14: 917-22

References for figures, tables and graphs:

Figure 1: Continuum Lifelong learning in Neurol, Autonomic disorders: Autonomic Nervous System: The basic anatomy and physiology Dec 2007 13 (6).

Figure 2: Ay H et al,Neuroanatomic correlates of stroke related myocardial injury, Neurology 2006; 66: 1325-29

Graph 1: Furio Cloivicchi et al, Prognostic implications of right sided insular damage, cardiac autonomic derangement and arrythmias after acute ischaemic stroke, Stroke; 36:1710-15

Table 1: Bassi A et al, Cardiac autonomic dysfunction and functional outcome after ischaemic stroke, European Journal of Neurology 2007; 14: 917-22

Interhospital Rehabilitation Meeting highlights ***(click here for slides)***

Oct: "Quality of Life among stroke patients"
Prof Timothy CY Kwok, CUHK Med
Dr Kevin KH Or, Shatin Hospital

Nov: "Musical Rehabilitation"
Dr James Luk, Fung Yiu King Hospital

Musicians are under constant psychological stress. They are also prone to various types of musculoskeletal problems related to their occupation. These include overuse syndrome, myofascial pain, inflammatory disorders, entrapment neuropathies, focal motor dystonias and joint hypermobility. In addition, they may have different kinds of skin problems, vocal cord diseases, eye and hearing problems and even oro-facial complications as a result of intensive instrumental playing. The disease pattern depends on the intensity of the practice, the types of instruments and the pieces the musicians are playing. Diagnosis and management of musicians' problems are often difficult and require specialized knowledge and experience.

Dec: Pain, distress and hypermobility
Dr CM Leung/Dr Carmen Ho, MacLehose Medical Rehabilitation Centre

Benign joint hypermobility syndrome is a chronic musculoskeketal problem with predominent widespread mechanical pain over joints and soft tissues. The underlying cause is believed to be due to laxity of periarticular tissues. Four cases fulfilled Beighton's diagnostic criteria for Benign joint hypermobility syndrome (BJHS). 2 cases of BJHS presented. They age from 26 to 48 years old. They all have polyarthralgia for more than 6 months, and chronic back pain. Their Beighton score varies from 4-9 out of 9. S- Shaped scoliosis, bilateral pes planus, and bilateral hallus valugx are the common features they have. 2 female patients suffer from post-exercise muscle and joint pain. One patient is an elite swimmer; she has bilateral supraspinatus tendinitis due to large volume daily swimming training. Apart from receiving NSAIDs for pain control, they receive an individualized course of rehabilitation, which includes, patient education, joint protection techniques, postural retraining, proprioceptive exercise and muscle strengthening exercise emphasizing on muscle balance training. Postural retraining starts from postural assessment, followed by appropriate training. Proprioceptive exercise includes exericse like swiss ball exercise; wobble board exercise; daily 30-60 seconds tip-toe walking; heel walking; wallking backward; and walking with eye closed. Stretching exercise is avoided as far as possible to prevent further damage to soft tissues in hypermobility. For the elite swimmer, her swimming training program has been changed from endurance programe, which requires long distance swim to more technique-orientated program, which comprises of more drills swimming. CONCLUSION: Symptomatology in BJHS could be quite heterogenous because of different demands in life. Rehabilitation for this group of patients requires understanding, patience and innovation.

Editorial Board Choices

1. Effect of Magnetic Knee Wrap on Quadriceps Strength in Patients With Symptomatic Knee Osteoarthritis

Chung-Yao Chen, MD, Chia-Ling Chen, MD, PhD, Steele Chih-Chin Hsu, MD, PhD, Shih-Wei Chou, MD, PhD, Kun-Chung Wang, MD

Osteoarthritis is a prevalent worldwide disease. The prevalence is increasing tremendously with aging in our population. The treatments for the knee OA include oral medication, intra-articular steroid or sodium hyaluronate injection, surgical management, and physical therapy (including therapeutic heat therapy, electrotherapy, muscular strengthening, knee brace, and insole usage). Pharmacologic agents commonly used in the treatment of OA are often costly, and possess numerous potential side effects that limit their use with many patients. Pulsed magnet field has been shown in literature to be useful. Current study's objective is to look at the effects of magnetic knee brace, which is a form of static magnetic field on isokinetic strength of quadriceps. The result shows that magnetic knee brace is not costly can increase isokinetic strength of quadriceps; improves both HAQ-DI (Health Assessment Questionnaire-Disability index) and HAQ-Pain scores.

2. Examination of selected clinical factors and medication use as risk factors for pneumonia during stroke rehabilitation: a case-control study

Marciniak C, Korutz AW, Lin E, Roth E, Welty L, Lovell L

The objective is to assess the association of selected clinical factors and specific medication use (proton pump inhibitors, H2 receptor antagonists, and angiotensin-converting enzyme inhibitors) with presence of pneumonia in patients with stroke undergoing acute inpatient rehabilitation. A reduction in pneumonia was not found with the use of angiotensin-converting enzyme inhibitors. Although tracheostomies, feeding tubes, proton pump inhibitor or H2 blocker use, and the presence of dysphagia were identified as risk factors for pneumonia on univariate analyses, none of these factors demonstrated an independent association with pneumonia on multivariate analyses. It may be more that the underlying impairment, rather than the assessed interventions, may confer greater risk of pneumonia in post-stroke patient.