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### Abstract from the Literature

by

James Ross

**Ri-Li G, Gaowa H. Current concepts in chronic mountain sickness: pulmonary hypertension related high-altitude heart disease. Wilderness Environ Med 2001; 12(3): 190-194.**

High altitude heart disease, a form of chronic mountain sickness, has been well established in both Tibet and Qinghai provinces of China, although little is known regarding this syndrome in other countries, particularly the West. This review presents a general overview of high altitude heart disease in China and briefly summarises the existing data with regard to the prevalence, clinical features, and pathophysiology of the illness. The definition of high-altitude heart disease is right ventricular enlargement that develops primarily (by high altitude exposure) to pulmonary hypertension without excessive polycythaemia. The prevalence is higher in children than adults and in men than women but is lower in both sexes of Tibetan high-altitude residents compared with acclimatised newcomers, such as Han Chinese. Clinical symptoms consist of headache, dyspnoea, cough, irritability, and sleeplessness. Physical findings include marked cyanosis, rapid heart and respiratory rates, oedema of the face, liver enlargement, and rales. Most patients have complete recovery on descent to a lower altitude, but symptoms recur with a return to high altitude. Right ventricular enlargement, pulmonary hypertension, and remodelling of pulmonary arterioles are hallmarks of high-altitude heart disease. It is hoped that this information will assist in understanding this type of chronic mountain sickness, facilitate international exchange of data, and stimulate further research into this poorly understood condition.

***Comment.** Chronic Mountain Sickness was first described in 1928 but there was no consensus on definition and diagnosis criteria. This HAHD was recognised in 1955. Fascinating article; with prevalence rates around 2% at 4-5000 metres, and more people moving to high altitude environments, this will be a syndrome to watch.*

**Georgievski K, et al. Fibrin tissue adhesives. Internat Review Armed Forces Med Services 2001; 74(92): 112-114.**

Throughout the centuries man have (sic) dreamt to repair injured parts of the human body by simple gluing. The purpose of this review is to present the world experience with Fibrin Tissue Adhesives and to provide the best way for manufacturing and clinical use of surgical sealant in our country (Macedonia). FTA (fibrin glue, fibrin sealant) is haemostatic and wound healing support product consisting of the blood coagulation factors: fibrinogen, factor XIII and thrombin, an antifibrinolytic agent and calcium chloride. Fibrin glue has been used to improve haemostasis, tissue sealing, suture support and wound healing in a wide variety of surgical procedures.

Recent renewed interest in biologic adhesives in our country associated with the large world clinical experience might soon help us to produce ideal surgical sealant with all possible advantages.

***Comment:** The syntax is rather strained, but nevertheless the development of haemostatic wound dressings is making rapid progress. There are other ideas using animal-based products, which are potentially much cheaper than human fibrin-based dressings.*

**Okamoto Y, et al. Relationship between morbidity and body mass index of mariners in the Japan Maritime Self-Defence Force Fleet Escort Force. *Mil Med* 2001; 166(8): 681-684.**

To establish a practical weight management program for mariners in the Japan Maritime Self Defence Force (JMSDF) Fleet escort Force, the relationship between morbidity and body mass index (BMI) was studied. To estimate morbidity, 10 medical problems were used as indices (hyperlipidaemia, hyperuricaemia, diabetes mellitus, lung disease, heart disease, upper gastrointestinal tract disease, hypertension, renal disease liver disease and anaemia). A curvilinear relationship was found between morbidity and BMI, in which a BMI of 17.5 was associated with the lowest morbidity. This curvilinear pattern was more complex than the curve reported previously for Japanese civilians. Using the present curve and aiming for a BMI of 17.5 will help in the design and implementation of a practical management program for health promotion in the JMSDF.

*Comment: A BMI of 17.5 in Australia would raise a few eyebrows. It is defined as underweight according to WHO. They did not look at musculoskeletal injuries or psychiatric illness. They would be of considerable interest and would be inclined to colour the results. This is a study I would not endorse.*

**Santee WR, et al. A proposed model for load carriage on sloped terrain. *Aviat Space Environ Med* 2001; 72(6): 562-566.**

**Background.** The purpose of this study was to develop a predicative model for uphill and downhill load carriage. Relative to level walking, net energy costs increase with uphill movement and decrease moving downhill. To simulate load carriage over complex terrain, a model must estimate the cost of downhill movement. The net cost of downhill movement is expected to reach a minimum value, then increase as work is required to maintain stability. Thus, downhill costs cannot be simply extrapolated from a linear relationship for uphill work.

**Method.** Oxygen uptake ( $V_{O2}$ ) was measured for 16 subjects during test sessions which consisted of walking at 1.34 m/sec on a single grade (-12%, -10%, -8%, -2%, 0%, +4%, +8% and +12%) with a 0, 9.1 or 18.1 kg load.

**Results.** No significant gender differences were found, therefore data were pooled. The minimum  $V_{O2}$  values occurred at -8% grade.

**Conclusion.** Our model assumes that the total energy requirement ( $W_r$ ) is the sum of the cost of level walking ( $W_L$ ) for the total mass (body plus load). For uphill work,  $W_V$  was calculated by multiplying the cost of vertical displacement by an efficiency factor. For downhill work, the cost of vertical displacement was modified by an exponential function of the slope compared with estimated values derived from two published studies to partially validate the negative model.

*Comment: A case of the delivered goods (data) did not meet the hype. A predicative model that says only that the most energy-efficient grade is - 8% is not doing its job.*

**Ulaska J, et al. Impact of chronic low back pain on military service. *Mil Med* 2001; 166(7):607-611.**

The performance of 245 male conscripts with chronic low back pain (CLBP) during military service was compared with their pre-prescription performance and with that of 126 age-matched controls without LBP. The frequency of LBP in the conscripts with CLBP increased significantly during their service period compared to risk before service (odds ratio 10.35; 95% confidence interval, 3.61-29.52). The same factors that induced LBP before entering service, mainly lifting and carrying, also caused LBP during military service. Of the conscripts with CLBP, 120 had injured their backs during lifting or carrying before entering service. During service, back problems were caused by accidents in 88 cases and by lifting or carrying in 157 cases. The frequency of LBP injuries, measured by the need for medical consultation or treatment, increased 2.4-fold (95% CI 1.41-4.10) during the term of service. Conscripts with CLBP served significantly more frequently as regular soldiers than the controls. There was no difference in participation in leisure time or competitive sports activities between the two groups. The future expectations of

the CLBP conscripts were pessimistic: only one fifth believed incomplete recovery, and two-fifths thought that they would need substantial outside help in the future.

**Comment:** *Interesting that there were no females (conscript in Finland only applies to males) and that they did not match for trade. Only about 1% of conscripts are rejected due to back problems. However, 2896 of 19-year-old Swiss conscripts had LBP; thus, very large numbers with symptomatic lower back problems enter service. There was no discussion of BMI, even though tantalisingly, demographic data showed weight range for cases was 53-120kg while for controls it was 56-105. Mean weight was almost identical. So, CLBP is not recommended for military service. In a volunteer force, this should mean strict standards. What this study does not attempt is to consider physiological/ anatomical diagnosis and outcome, just symptomatology.*

**O'Brien K, et al. Hyponatraemia associated with overhydration in US Army trainees. Mil Med 2001; 166(5): 405-410.**

This report describes a series of hyponatraemic hospitalisations associated with heat-related injuries and apparent overhydration. Data from the US Army inpatient data system were used to identify all hospitalisations for hypoosmolality /hyponatraemia from 1996 and 1997. Admissions were considered as probable cases of overhydration hyponatraemia if this was the only, or primary, diagnosis or if it was associated with and heat-related diagnosis. Seventeen medical records were identified, and the events leading to the hospitalisation were analysed. The average serum sodium level was 122 +/- 5 mmol/L (range 115-130 mmol/L). All 17 patients were soldiers attending training schools. 77% of hyponatraemia cases occurred in the first 4 weeks of training. 9 patients had water intake rates equal to or exceeding 2 quarts per hour. Most patients were in good health before developing hyponatraemia. The most common symptoms were mental status changes (88%), emesis (65%), nausea (53%) and seizures (31%). In 5 of 6 cases in which extensive history was known, soldiers drank excess amounts of water before developing symptoms and as part of field treatment. The authors conclude that hyponatraemia resulted from too aggressive fluid replacement practices for soldiers in training status. The fluid replacement policy was revised with consideration given to both climatic heat stress and physical activity levels. Field medical policy should recognise the possibility of overhydration. Specific criteria should be established for exertional illness.

**Comment.** *Hyponatraemia has really not received much attention here. We have focused on the risks of heat injury and promoted fluid replacement, the usual being plain water. It is worthwhile to have some, if not all fluid replacement in the form of 'sports drinks' where activity is in excess of 45 minutes. Some suggest two litres of water for everyone litre of sports drink.*

**Knowlan M, et al. A survey of Navy Physicians' attitudes toward the use of Selective Serotonin Reuptake Inhibitors in Active Duty Military Personnel. Mil Med 2001; 166(6): 526-529.**

A series of recent pharmacological discoveries have produced remarkable advances in psychotherapeutic medications. With the advent of newer antidepressants, there is a high degree of efficacy and a low-risk profile. Potential benefits of these medications far outweigh the possible side effects, especially in contrast to older drugs. Navy medicine now has the ability to treat active-duty personnel during a deployment with safe antidepressant medications. The attitudes toward the use of SSRIs on active duty service members has been surveyed. Profiles of prescribing patterns and attitudes toward the use of these medications and safety within the context of the operational environment were also surveyed. Group comparisons across various medical specialties and command organisations were made. The survey results suggest a very favourable attitude toward prescribing SSRIs in the active-duty population.

**Comment.** *This is a hot topic in Defence Health Service at present. Should people with such diagnosis be deploying? The issue appears to revolve around how dependent they are on their medication. If they would decompensate without medication, then they should not be deployed, if the medication is there to just make them function at a higher level, but would function adequately without it, then they probably are fit to deploy on SSRIs.*