

Of INTEREST from MEDLINE

Medline is the doctors' resource for the latest publication of research papers. Below are some that may be of interest to us as polio survivors. These studies may throw some light on the reasons why some known problems occur in post polio and how we may improve them.

BLOOD PRESSURE

Is this maybe the answer to why beta blocker blood pressure tablets are a problem in post polio

published - Journal of Cardiac Failure 1998 June; 4(2): 121-6
authors - Panchal AR, Stanley WC, Kerner J, Sabbah HN
Dept of Physiology and Biophysics, Case Western Reserve Uni
Cleveland, Ohio USA

This study was actually looking at how beta-blockers assist in heart failure and the study was done on dogs with heart failure. So whilst showing that beta-blockers were effective in treating heart disease, of significance to polio survivors, is a hitherto unknown action of the beta-blocker. Bear in mind the fact that our WA carnitine research on serum carnitine levels reveals many polio survivors to have abnormal carnitine function, particularly carnitine deficiency and under-utilization of carnitine - this study shows that beta blockers decrease the carnitine (CPT-1) enzyme that is essential for allowing carnitine to pass through the mitochondria membrane to produce energy. We could therefore surmise that the action of beta blockers in inhibiting the carnitine enzyme, would further deplete carnitine usage in polio survivors who are already deficient in carnitine and so increase fatigue. Quote from the article -

"CONCLUSION: Metoprolol (Betacloc) induced a decrease in CPT-1 activity and an increase in triglyceride content. These results suggest that the improved function observed with beta blockers in heart failure could be due, in part, to a decrease in CPT-1 activity and less fatty acid oxidation by the heart."

ALSO on the need for carnitine by the heart muscle -

published - Japanese Circulation Journal 1992 Jan; 56(1):86-94
authors - Kobayashi A, Masumura Y, Yamazaki N
Dept of Internal Medicine, Hamamatsu Uni Med School Japan

"L-carnitine thus can restore the fatty acid oxidation mechanism which constitutes the main energy source for the myocardium. Therefore, these results indicate that L-carnitine is a useful therapeutic agent for the treatment of congestive cardiac failure combined with traditional pharmacological therapy"

ANAESTHETICS

Again, this may be an important link as to why many polio survivors are known to experience poor recovery from anaesthesia, surgery and stress.

published - Journal of Clinical Pharmacology 1995
15 (5-6):191-9
authors - Pessotto P, Liberati R, Petrella O, Hulsmann WC
Dept of Biochemistry, Sigm-Tau S.p.A., Pomezia, Italy

This study on rats, examines the effect anaesthesia, surgery and stress has on carnitine levels and urinary carnitine loss. It was found that under these conditions cortisone levels in the blood rose and carnitine levels fell. Carnitine

accumulated in the liver but in heart and muscle, used carnitine dropped and unused carnitine increased. (ie less was used) At the same time cholesterol fell and urea increased, indicating protein breakdown. (this occurs when muscle cells are destroyed for energy and could result from insufficient carnitine to enable normal use of fatty acids for energy). Quoting from the article abstract -

"Acylcarnitine administration during pre- and operative step might prevent loss of carnitine, promoting the heart (and muscle) energetic metabolism and reducing the proteolysis (protein breakdown). Moreover, in accordance with a recent interpretation of carnitine action as a membrane-stabilising agent, the acylcarnitine supply could reduce the risk of "oedema" that follows the anaesthesia and surgical intervention."

EXERCISE

published - Japanese Heart Journal 1995 May; 36(3):319-31
authors - Watanabe S et al
Dept of Internal Medicine, Uni of Tsukuba, Japan

"In conclusion, this study demonstrated that L-carnitine increase and DL-carnitine decreases exercise tolerance in patients with impaired exercise tolerance."

published - Journal of American College of Nutrition
authors - Brass EP, Hiatt WR
Dept of Medicine, Harbor-UCLA Medical Centre, Torrance USA

"Preliminary data have demonstrated beneficial effects of carnitine supplementation to improve muscle function and exercise capacity in these patients. Peripheral arterial disease is also associated with altered muscle metabolic function and endogenous acylcarnitine accumulation."

PREGNANCY

published - Journal of Peri-natal Medicine 1995; 23(6): 477-85
authors - Shoderbeck M et al
Dept of Medical Chemistry, Uni of Vienna Med School, Austria

"The results of the present study demonstrate that during pregnancy whole blood and plasma carnitine levels decrease to those levels found in patients with carnitine deficiency. Also the percentage of acylcarnitine on total carnitine, found in the present study, is characteristic for a secondary carnitine deficiency. Thus L-carnitine substitution in pregnant women, especially in risk pregnancies, may be advantageous."

TAURINE

published - Journal of Pharmacological Experimental Therapies 1998 Sep; 286(3):1183-90
authors - Pierno S, Luca A, Camerino C, Huxtable R, Camerino
Dept of Pharmacobiology, Uni of Bari, Bari, Italy

This study on rats looks at taurine in aging muscle cells **"Our results suggest that the reduction in taurine content could play a role in the alteration of electrical and contractile properties observed during aging. These findings may indicate a potential application of taurine in ensuring normal muscle function in the elderly."** Maybe this is why taurine seems to help in post polio too.