Commentary

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Metabolic Effect of Lipid Accumulation in Animals Body

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Description

Fibro Myalgia Syndrome (FMS), the second most common "rheumatic" disorder, is characterized by chronic pain localized in multiple body areas, with the associated symptoms of sleep disturbances, cognitive dysfunction, fatigue, and a range of gastrointestinal symptoms. The estimated incidence of FMS is 2-4%, and most patients are female. However, the diagnosis is usually difficult, with a majority of patients waiting for over 2 years to be diagnosed, which leads to more spending. At present, FMS is treated by a multi-mode method, which can be divided into drug therapy and non-drug therapy.

Lipid Accumulation Product

VAI has been shown to be associated with both tissue insulin sensitivity and visceral adipose tissue. Another useful tool is the Lipid Accumulation Product (LAP) which adds waist circumference and triglyceride levels and has been recognized as an effective marker of metabolic syndrome in adult populations.

The former mainly uses Nonsteroidal Anti-inflammatory Drugs (NSAIDs), opioids, and other drugs. But the research of Ernest Choy shows no significant differences between NSAIDs and placebos in reducing pain. In addition, the use of opioids may cause hyperalgesia and paradoxically increase the pain of FMS. The low effectiveness and high side effects of drug therapy make it difficult to choose as a treatment priority.

Hence, non-pharmacological therapy is recommended to be first-line therapy by European League Against Rheumatism (ELAR), which includes patient education, exercise, cognitive behavioral therapy, and complementary and alternative medicine. In addition, Wang C in a 2010 study confirmed the therapeutic effect of tai chi on fibromyalgia. Among non-pharmacological treatments, FMS therapeutic guidelines moderately recommend acupuncture as it may improve FMS symptoms. Studies suggest that 60-90% of FMS patients use one or more complementary or alternative therapeutic methods, and of these 22% try acupuncture therapy. There is strong evidence supporting the therapeutic effects of acupuncture.

A review confirmed acupuncture had significant effects in improving the pain and quality of life of patients with FMS, no matter in the short or long term, with fewer adverse reactions and higher safety. While in the comparison of acupuncture with other non-pharmacological treatments concluded that acupuncture has better pain relief. For example, concluded that acupuncture has a more significant improvement in FMS compared to exercise alone; the study showed that acupuncture showed more significant improvements in symptoms of pain and fatigue in FMS compared to education. This shows that the efficacy of acupuncture is more pronounced than other non-pharmacological treatments.

Body Mass Index

High serum Cu concentrations are associated with obesity; it has been shown that Cu positively correlates with Body Mass Index (BMI) and leptin and insulin levels. Although metabolic syndrome may be aggravated by heavy metals, also abnormal serum concentrations of bio-elements can coexist with METS. It has also been shown that patients with diabetes have higher Ca and Mg levels in serum, and Cr and Mn are higher in obese men. Finally, there is very little data on the concentrations of bio-elements in bone tissue compared to the indicators of metabolic disorders. Studies widely report the relationship between body mass indexes and bone mineral density but they rarely consider bone mineral composition.

The specific mechanism of acupuncture for FMS is currently unknown. Now there are two main hypotheses. The first one is the neurohormonal theory, which suggests that by pricking needles into specific locations, A-delta and C afferent nerve fibers are stimulated, which then transmits to multiple locations in the central nervous system to trigger the release of endogenous opioids. Another theory is the long-term depression hypothesis, which suggests that acupuncture leads to a release of neurotransmitters that down regulate A-delta fibers and provide long-term pain relief.

At the current stage, the distribution to the study of acupuncture treatment for FMS is scattered relatively, which makes it difficult for clinical practitioners and researchers in related fields to understand the emerging trends of a research field timely and effective. Through bibliometrics, scholars can quantitatively identify detailed research trends and abrupt changes, for making academic decisions.

The aim of this study was to investigate the relationships between serum and bone concentrations of selected bio elements like zinc, copper, iron, chrome, magnesium, and selenium, and a heavy metal like lead, and the selected

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indicators of metabolic disorders Visceral Adiposity Index (VAI), Lipid Accumulation Product (LAP) and Body Mass Index (BMI).

The study comprised 151 men aged 60 to 75 years who were scheduled for hip replacement surgery due to osteoarthritis. The concentrations of elements in the serum and bone tissue were measured using inductively coupled plasma optical emission spectrometry (Mg, Zn, Cu, Cr, Fe, and Pb) and the spectrofluorometric method. Fasting Plasma Glucose (FPG), high-density cholesterol, and tri-acyl-glycerols were determined. Lipid Accumulation Product (LAP) and Visceral Adiposity Index (VAI) were calculated.

There was no relationship between serum and bone concentrations of bio-elements and lead and the BMI index. Bone Mg was significantly higher in men with higher VAI, but no such relation was observed in the serum. Similarly, bone Mg and Zn were higher in patients with higher LAP, which was not observed in the serum. Multivariate logistic regression analysis with adjustment for age was performed. There was a correlation between serum Zn concentration and the cut-off point for VAI. The cut-off point for LAP was related to the bone tissue concentrations of Mg, Zn, and Cu.

We found some relationships between the concentrations of selected bio elements and Pb and VAI, LAP, and BMI in bone but not in the serum. VAI positively correlated with bone Mg, while LAP positively correlated with bone Cu, Zn, and Mg.

The relationships between macronutrient and micronutrient concentrations in various body tissues and metabolic disorders are varied but still not entirely understood. They are responsible for maintaining normal osmotic pressure and electrolyte balance; they regulate various metabolic processes and are the elements of hormones, enzymes, and coenzymes.