

Preventive medicine and the traditional concept of living in balance

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Abstract

Chronic diseases such as arthritis, heart disease and type 2 diabetes are becoming much more common. The cost of maintaining patients inflicted with these diseases increases yearly. These diseases were less common prior to 1970. This paper will consider several questions. How do toxic lifestyles contribute to these chronic diseases? What is preventive medicine? How can traditional healing help educate people about disease prevention? What is the traditional concept of balance and how is it important in modern medicine? The dangers of obesity are discussed in terms of inflammatory adipokine and inflammatory fat production. Mechanisms of disease causation or promotion are reviewed for heart disease, type 2 diabetes, arthritis and cancer. A preventive medicine approach to preventing or perhaps curing these diseases is given which involves treating toxic lifestyles and encouraging people to live in balance. The traditional concept of balance is explained in traditional Chinese medicine terms and in scientific terms. Yin and yang are cold and hot but can also be seen as agonist and antagonist. In addition, yin and yang can be seen as rest and exercise. When yin and yang are in balance, chi flows in the body. Chi is the flow of extracellular and intracellular signaling compounds and processes in the body. When the body is

in balance, it can heal itself. The traditional concept of balance should be taught as a central principle of preventive medicine.

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Key words: Preventive medicine; Traditional healing; Balance; Arthritis; Heart disease; Type 2 diabetes; Cancer

Core tip: When the body is in balance, the body can heal itself. Balance involves balancing rest and exercise, body fat and body muscle. Nutrition is critical to balance and requires balancing meat and vegetable/fruit intake. Preventive medicine should teach patients to exercise regularly, eat properly, drink no more than one alcoholic drink daily and avoid smoking. Following this protocol, patients can keep themselves thin, strong and in balance. This will prevent or perhaps cure chronic diseases such as heart disease, type 2 diabetes, arthritis and cancer.

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INTRODUCTION

The Organisation for Economic Co-operation and Development reports that medical costs in the United States were almost 18% of the gross national product in 2010. This is more than a threefold increase from about 5% of the gross national product in 1960. Healthcare costs are increasing every year around the world. Healthcare costs increase because of increasing incidences of heart disease, arthritis, type 2 diabetes and cancer according to the Centers for Disease Control in the United States. As of 2010, about 8% of United States adults have type 2

diabetes. What causes the incidence of these diseases to increase yearly?

HOW DO TOXIC LIFESTYLES CONTRIBUTE TO CHRONIC DISEASES?

Several factors are involved in toxic lifestyles: stress, smoking, alcohol consumption, lack of exercise and obesity^[1]. All of these factors increase the risk of suffering from chronic diseases and cancer^[1]. Stress is a well-known risk factor for the development of heart disease^[2,3]. It is less clear how much stress contributes to other diseases. Smoking is known to cause heart disease^[4]. Nicotine interacts with nicotinic acetylcholine receptors in endothelial cells and stimulates oxygen radical formation that damages arteries^[5]. This damage increases atherosclerosis. Smoking is also well known to increase the incidence of cancer in several organs as discussed at the Centers for Disease Control website.

Alcohol consumption upregulates the synthesis of sterol regulatory element binding protein^[6]. This induces several lipogenic genes leading to triglyceride and ceramide accumulation and endocannabinoid synthesis. Ceramide and endocannabinoids, in excess, are toxic and damage endothelial cells and other cells^[1]. Excessive alcohol consumption causes visceral fat to accumulate and release several inflammatory adipokines^[1].

Obesity results in visceral fat accumulation. Visceral fat is the fat that surrounds the intestines and other visceral organs. This fat releases toxic lipids, such as ceramides and endocannabinoids, and inflammatory proteins, called inflammatory adipokines^[1]. Subcutaneous fat does not perform these functions. However, perivascular fat may function like visceral fat in terms of the induction of inflammation by releasing toxic factors.

Lack of exercise is a risk factor for chronic diseases since sedentary people lose muscle mass and tend to accumulate fat, including visceral fat. How muscle mass is important in health is not entirely known. Muscles are certainly important for motion, balance and can prevent falls. Exercise stimulates stem cell growth in every organ^[7-10]. Exercise also stimulates nerve growth in the adult human brain^[11]. Stem cells are important for maintenance of normal organ functions.

Why is obesity so important? Visceral fat secretes inflammatory adipokines and toxic lipids^[1]. There are many adipokines including: visfatin, leptin, C-reactive protein, tumor necrosis factor α , resistin, angiotensin II, heparin binding epidermal growth factor like growth factor, angiotensin II and interleukin 6. The mechanisms of action of some adipokines are still under investigation. However, the mechanisms of toxicity of many adipokines are well described. As visceral fat accumulates, it becomes hypoxic, resulting in down regulation of peroxisome proliferator activated receptor γ 1 and less production of vascular endothelial growth factor^[12]. Hypoxia inducible factor 1 is produced and upregulates the production of inflammatory adipokines in fat cells and macrophages.

Macrophages and T cells infiltrate into hypoxic visceral fat and are stimulated to secrete cytokines and adipokines.

It is clear that visceral fat causes heart disease by a multifactorial process described below^[1,13-15]. Ceramide causes inducible nitric oxide synthase to dysfunction and produce oxygen radicals. This is toxic to the kidney and increases blood pressure. Endothelin synthesis increases resulting in hypertension. Visfatin and leptin cause defects in artery walls. Tumor necrosis factor α , resistin and C-reactive protein cause adhesion molecule synthesis that leads to adherence of neutrophils and macrophages. These inflammatory cells become activated by visfatin and leptin and start the process of plaque accumulation. Smooth muscle cell proliferation is stimulated by platelet derived growth factor, angiotensin II and heparin binding epidermal growth factor like growth factor. Eventually the plaque becomes unstable due to induction of matrix metalloproteinase activity by C-reactive protein and visfatin.

Visceral fat causes type 2 diabetes by a multifactorial process^[16-20]. Increased ceramide inhibits tyrosine phosphorylation of the insulin receptor and causes insulin receptor dysfunction. Ceramide also causes inducible nitric oxide synthase dysfunction and oxygen radical formation that can damage the pancreas. Resistin and resistin like molecules antagonize the actions of insulin. Visfatin, tumor necrosis factor α and interleukin-6 are involved in long term dysfunction of the insulin receptor. They also increase fatty acid release from adipocytes. These fatty acids are taken up by muscle and cause muscle to become resistant to insulin.

Visceral fat causes osteoarthritis by a multifactorial process^[21-25]. Endocannabinoids are made by visceral fat and synovial fibroblasts, and activate synovial macrophages that make inflammatory adipokines^[26]. Macrophages invade into synovial spaces after stimulation by adipokines from visceral fat such as leptin, C-reactive protein and interleukin-6. Macrophages, neutrophils and T cells instigate an inflammatory process in the joint. Macrophages can be stimulated by fibroblast derived colony stimulating factor-1 to invade bone and become osteoclasts. Activated macrophages release resistin that stimulates fibroblasts. This is a vicious cycle where synovial fibroblasts stimulate macrophages that stimulate fibroblasts. This vicious cycle results in pain and joint destruction. Even when osteoarthritis is not present, obesity increases osteoporosis in women and men^[27].

Unfortunately, current pain treatment in arthritis and other conditions all too often involves opioids that are addictive, cause seizures and respiratory depression. In the United States, as of 2013, there are about 14000 people dying yearly from prescription opioid overdose according to the Centers for Disease Control. This is more than 4 times the number of people who die yearly from heroin overdose in the United States.

Cancer is caused by damage to DNA. The growth of cancer is promoted by obesity. Obesity increases the risk of developing cancer and mortality from cancer^[28]. Cancer can grow only when the body is not able to kill

tumor cells adequately. Visceral fat releases inflammatory adipokines, such as interleukin-6, tumor necrosis factor α and leptin, that promote the growth and malignancy of tumor initiating stem cells^[29]. In the presence of inflammatory adipokines, the body is not able to mount an adequate defense against tumor cell growth and metastasis.

The chronic diseases and cancer discussed above are each caused by the activation of multiple genes resulting in multiple adipokines and toxic lipids being produced. Clearly the concept of one gene malfunctioning and producing any of these diseases is incorrect. Treatment of these chronic diseases has focused on single, highly selective drugs that block one specific pathway in the disease process. This is somewhat like placing a small rock in a large stream. The stream simply flows around the rock. The use of highly selective drugs may slow down, but does not stop the disease process. Drugs that control blood glucose, blood pressure and blood cholesterol are important and can keep patients alive. However, the disease processes continue. Patients must remain on these drugs for the rest of their lives and must contend with the toxicities of the drugs for the rest of their lives. Modern medicine has forgotten that drugs do not cure. Drugs help the body to heal itself^[1,30]. Currently, there is far too much dependence on drugs to improve health and not enough use of preventive medicine.

WHAT IS PREVENTIVE MEDICINE?

Preventive medicine is the practice of helping patients live healthy lifestyles and stop living toxic lifestyles. This involves stress reduction techniques, mindfulness therapy, exercise therapy, nutritional guidance, smoking and alcohol cessation, weight loss therapy and other therapies. Stress and anxiety are constant companions of each person. That cannot be changed. What can be changed is how each person reacts to stress and anxiety. This is where stress reduction and mindfulness techniques are helpful^[2]. In the United States, nutritional guidance comes from television, newspaper and magazine information. This information is frequently incorrect. Nutritional information from these sources usually over emphasizes the importance of eating meat in order to maintain adequate protein intake. However, meat eating frequently results in high fat intake. For instance, hamburger may provide 65% or more of its calories from fat, not protein. High fat diets are toxic^[1]. Smoking and alcohol cessation therapies exist and can be successful in many patients. Weight loss therapies and surgeries exist, but are sometimes not successful at all^[31]. Frequently the benefits of weight loss surgery and therapy do not last for more than a few years^[32].

Obesity is an addiction to eating fat, such as triglycerides. Fat is abundant in fast foods and convenience foods. Fat consumption leads to endocannabinoid synthesis, opioid peptide synthesis and the upregulation of brain opioid receptors^[33-35]. Endocannabinoids stimulate transient receptor potential cation channels in the brain leading to pain relief and more hunger. Opioid peptides,

including enkephalin and dynorphin are pain relievers and are addictive. Eating fat also stimulates ghrelin release in the gut that stimulates appetite^[36]. Obesity should be treated as an addiction.

Why is exercise so important in preventive medicine? Exercise can reverse heart disease and increase longevity^[37]. Exercise decreases the progression of arthritis^[38-47]. Exercise decreases the progression of type 2 diabetes^[48-50]. Exercise may help patients survive cancer^[51]. The combination of weight loss and exercise may help patients suffering from these diseases and should be examined in clinical trials. The questions that should be asked are as follows. Can a combined program of weight loss and exercise cure heart disease? Can a combined program of weight loss and exercise cure type 2 diabetes? Can a combined program of weight loss and exercise cure arthritis? Can a combined program of weight loss and exercise decrease the risk of developing cancer?

HOW CAN TRADITIONAL HEALING HELP?

Traditional Chinese medicine teaches people to live in balance, to learn how to balance yin and yang in the body^[52]. Yin is cold and wet. Yang is hot and dry. Basically, each person must balance cold, sedentary times of the day with hot, physical times. In other words, daily exercise may be required to balance times of rest. Similarly, a balanced diet must be consumed. Yang foods such as meats and chilis, must be balanced with yin foods such as melons and vegetables. A person's body must be in balance with the correct amount of fat (yin) balanced by the correct amount of muscle (yang). Balance allows the flow of life forces in the body called chi^[52]. Chi has recently been proposed to be composed of signaling processes in the body controlled by endogenous signaling compounds and receptors^[52]. When chi flows, the body can maintain its health. In traditional China, obesity was a dishonor to the ancestors who give each of us our bodies. Each of us must keep our bodies in balance for ourselves and our families, in order to keep ourselves healthy. If a person lives in balance, the body can heal itself.

Traditional medicine in many areas of the world teaches people to live in balance^[53]. Among American Indians, to live in balance means: love God, love your family, respect all people, work for your community, keep yourself thin and strong, take only what you need, and do not pollute^[53,54]. American Indians recognize a balance between hot and cold as well as wet and dry. Maintaining this balance in the body is essential for health. American Indians approach hot and cold very directly. If a person needs to be treated with hot treatments, they are put in the sweat lodge, hot spring or similar hot treatment^[54,55]. If a person needs a cold treatment, they are told to swim in the sea, a lake or similar cold treatment. Daily physical activity is required and must be balanced with times of rest. If a person lives in balance, the body can heal itself.

In Arab traditional medicine, there is a similar concept of balance^[56]. The normal state of the body is balance, which is health. Illness results from being out of balance.

Balance is derived from worshipping Allah, loving your family, respecting all people, working productively, maintaining a fit body, and eating a balanced diet. A diet must be balanced in terms of quality and quantity of food.

Traditional medicine has kept human beings alive for the entire existence of the human species, about 200000 years. During the hunter gatherer period, daily running and walking were essential to survival. Our bodies have evolved for 200000 years with daily running and walking. This means that people who were good runners and walkers survived and passed on their genes. There has been a natural selection for running and walking. Prior to 1970, cancer and chronic diseases such as heart disease, type 2 diabetes, and arthritis were uncommon, as can be seen at the Centers for Disease Control website. This is because people used to keep themselves thin and strong, in other words in balance. Obesity was uncommon prior to the 1970's according to the Centers for Disease Control. People used to follow what traditional medicine taught. This teaching was frequently passed down from a person's grandparents.

Traditional medicine should be revitalized in modern society. We should teach again the principles of living in balance to allow the body to heal itself. Traditional medicine should be integrated into preventive medicine. Traditional medicine should be taught to healthcare professionals. Preventive medicine should become a major focus of modern medicine. It is very possible that when people learn to live in balance the incidences of heart disease, type 2 diabetes, arthritis and cancer will decrease.

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