

The Newsletter of THE AMERICAN INSTITUTE OF STRESS

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DOES INCREASED "TENSION" CAUSE HYPERTENSION ?

"Stress", "Pressure", and "Tension", are synonyms. Therefore, it should not be surprising that increased blood pressure is viewed by many as also being indicative of a state of increased emotional stress and tension. If such a connection exists, which comes first, or do they have a common cause? Almost 100 years ago, one of the earliest studies of hypertensive men emphasized that "one finds an unusual frequency of those, who as directors of big enterprises, had a great deal of responsibility, and who, after long periods of psychic overwork, became nervous". A debate over whether a particular "hypertensive personality" exists has gone on ever since. Some believe that patients with hypertension are characterized by a generalized state of increased anxiety, while others claim that feelings of suppressed anger are more common. A tendency towards submissiveness and introversion has also been suggested, and increased denial and resistance to

pain have been reported in those with a family history. How can such varied opinions be reconciled?

The most likely explanation is that what we call "essential hypertension" is neither a discrete disorder nor a distinctive diagnosis. It simply means that systolic and/or diastolic pressure measurements are consistently elevated when taken under basal conditions, and that this is not due to some underlying disorder such as coarctation of the aorta, unilateral renal disease, pheochromocytoma, or primary aldosteronism. Hypertension is really more of a description than a diagnosis. It's very much like the popular diagnosis of fever during the last century, for which a variety of non specific therapies were advocated. It's now quite obvious that fevers can have varied causes ranging from viral and bacterial infections, to cancer and connective tissue disorders. Each of these requires very different types of drugs. Cortisone might provide dramatic benefits for a patient with a temperature of 104° due to systemic lupus, but lethal if the problem was tuberculosis. Proper treatment depends upon finding the source of an elevated temperature, rather than simply attempting to lower it. Time honored approaches such as aspirin and

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The Newsletter of
**THE AMERICAN INSTITUTE OF
 STRESS**

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fluids can often accomplish this, but may not always be desirable. Fever can represent a purposeful response in certain circumstances. Indeed, decades ago, artificially induced fever therapy was often used to treat various disorders, including rheumatoid arthritis, syphilis, and cancer.

Treating Hypertension: Are the Blind Leading the Blind?

There are several similarities between how fever was viewed in the last century, and our current conceptualization of hypertension. This is particularly true with respect to diagnosis and treatment. The first advice generally given to patients with high blood pressure is to avoid salt and adhere to a low sodium diet. However, most fail to respond to this. Sodium restriction is probably most effective in those with a family history or certain genetic traits. For others, calcium deficiency appears to be the culprit, and hypertension improves following calcium supplementation. Such individuals might actually worsen on a low sodium regimen, since this would sharply restrict the intake of dairy products, which are the major sources of dietary calcium. Elevated blood pressures can similarly be lowered

by potassium and/or magnesium supplementation, or by adhering to a vegetarian diet. Vigorous treatment of hypertension can also backfire, particularly when its significance and cause is unknown. Reducing the sodium load with diuretics may increase the risk of sudden death due to ventricular fibrillation, because of the resultant reduction in serum potassium. In elderly patients, increased adverse events may also accompany aggressive attempts to lower blood pressure to arbitrarily defined "normal" ranges.

The fact that hypertension can have many causes requiring very different treatments is attested to by the more than 80 different prescription preparations currently available. Unfortunately, we do not have any algorithm which will allow us to predict with certainty which medication will be the most effective in any given patient. In addition, many have disturbing side effects that can significantly affect health and/or quality of life. Therefore, current guidelines recommend that safe, non-drug approaches, should be considered first, consistent with the Hippocratic dictum *primum non nocere* (First of all, don't harm the patient). These might include weight reduction, specific dietary interventions as noted above, jogging, walking and other exercise regimens. Meditation, yoga and other stress reduction strategies may also provide benefits, but are less often advocated. This seems somewhat surprising in view of the common association of stress with hypertension, and the widespread utilization of rest, relaxation, bromides, and phenobarbital, prior to the advent of specific anti-hypertensive drugs.

Stress And Hypertension

In addition, although there are many different causes of hypertension, stress can contribute to or aggravate almost all of them. This includes salt sensitive hypertension (in both humans and animals), obesity, caffeine consumption, cigarette smoking, excessive alcoholic intake, and especially hypertension in blacks. A rise in blood pressure regularly results as soon as we start to speak, except in schizophrenics. A similar phenomenon is seen in

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deaf mutes using sign language, but not when they move their hands in a vigorous but meaningless fashion. Baseline blood pressure, rapidity and volume of speech, subject matter, and the relative social status of the audience, can all affect the magnitude of this elevation. These observations suggest a relationship with emotional rather than physical stress. Although the rise may be dramatic and even alarming, it appears to be a normal reaction with little prognostic significance. Blood pressure also rises sharply in the "fight or flight" response due to increased sympathetic-adrenal medullary activities. Along with this, there is a heightened state of anxiety and tension, but which comes first? Evidence for increased sympathetic tone can be demonstrated in most hypertensives, and some authorities believe this could contribute to fixed hypertension if persistent. However, in those with co-existent anxiety, it is again not clear whether both stem from a common cause, whether anxiety causes increased sympathetic tone, or whether the reverse might be true.

There have been several attempts to unravel these interrelationships, the major stumbling block being the ability to accurately measure levels of anxiety over protracted periods of time. The most common and cost effective approaches utilize questionnaires to assess various aspects of anxiety. However, all of these are subject to the usual problems that plague self report instruments because of personal bias, and the need to validate test retest scores to satisfy concerns about reliability. It is also not certain whether state anxiety measurements, which reflect the individual's status at that particular moment, are preferable to ratings of trait anxiety, with respect to demonstrating a causal relationship with sustained hypertension. It would seem quite obvious that increased anxiety would normally be present in individuals in whom a deadly diagnosis such as cancer or AIDS had been confirmed. How often this might apply to patients following a diagnosis of hypertension, is less certain. Indeed, as noted previously, hypertensive patients may have a tendency to exhibit an unusual degree of denial, or lack of concern about their condition.

Does Anxiety Cause Hypertension?

Some studies do suggest that fixed hypertension occurs more frequently in individuals who have had antecedent chronic high anxiety levels. In one large prospective study with a twenty year follow up period, about half the participants eventually developed hypertension. In a subgroup of over 300 men aged 45-59, high anxiety ratings based on the Framingham tension scale at the time of initial evaluation proved surprisingly predictive for future hypertension. In terms of prognostic power, anxiety levels were second only to baseline systolic blood pressure. This finding was independent of other risk factors for hypertension, such as obesity and alcohol intake. In contrast to other reports, anger measurement levels showed no such relationship, although this may have been related to the questionnaires that were utilized. In another prospective 3 year study of almost 500 women, 7 developed hypertension requiring permanent medication. Here again, baseline systolic pressure and anxiety level scores had the greatest prognostic significance. These and other studies support the contention that high levels of chronic anxiety may produce increased sympathetic tone of sufficient degree and duration to result in sustained hypertension, but other mechanisms may be involved.

What is needed, is to determine whether such relationships occur more often in hypertensives who can be classified by renin profiles, magnitude of insulin resistance, or other objective criteria. This might help to further delineate specific subgroups of hypertension, and gain insight into possible stress related mechanisms that could contribute to its development, persistence, magnitude, and possibly complications. Although the issue is far from settled, it does appear that "too much" or "hyper" tension, may be an apt description of not only the physical manifestations, but also the cause of this disorder, at least for some patients.

Paul J. Rosch, M.D., F.A.C.P., Editor

When you suffer an attack of nerves you're being attacked by the nervous system. What chance has a man got against a system?

Russel Hoban

More On Stress And Male Menopause

One of the presentations that attracted the most attention at the Fifth International Montreux Congress on Stress, was Dr. Malcolm Carruthers' description of the diagnosis and treatment of what he has termed the "viropause". Dr. Carruthers has had a distinguished career in stress research, being one of the first to describe the beneficial effects of beta blockers on stage fright and performance anxiety. Over the past decade, he has been conducting extensive research into a variety of symptoms which affect many middle age men, such as fatigue, lack of drive, irritability, depression, anxiety, and diminished sexual activity. Occasionally, there may be hot flashes and even night sweats, similar to those experienced by menopausal woman due to lack of estrogen. However, numerous studies have failed to show any decrease in testosterone levels in such individuals, and indeed, most men continue to produce male hormone well into their seventies.

Carruthers' research suggests that the problem is not due to deficiency of male hormone, but rather a protein known as sex hormone binding globulin (SHBG). This appears to increase with age, and blocks the normal action of testosterone on cells and tissues. At his Hormonal Health Care Centre in London, he has studied over four hundred men with symptoms fitting the description of male menopause. All had normal levels of testosterone, but increased levels of SHBG, "as if these people aged prematurely in hormonal terms". Treatment consists of a daily oral testosterone supplement, which causes a lowering of elevated SHBG levels. For long term treatment, a slow release hormone pellet can be implanted in the buttock, which lasts for approximately six months.

Stress appears to be an important precipitating factor in this syndrome, which Carruthers has termed "the viropause". As part of the overall treatment, stress reduction measures are emphasized, along with attention to other life style changes as appropriate, such as reducing alcohol intake, stopping smoking, and weight reduction, all of which may be

contributing factors. Patients are screened and followed very carefully to rule out cancer of the prostate, since some evidence suggests that testosterone therapy can aggravate prostate malignancy in susceptible individuals. The type of oral testosterone administered is allegedly safer than the product commonly used in the United States. A satellite Health Care Centre has already been established in Honolulu, with plans for others in New York and California.

Longevity-January 1994

To succeed with the opposite sex, tell her you're impotent. She can't wait to disprove it.

Cary Grant

Boys will be boys, and so will a lot of middle-aged men.

Kin (F. McKinney) Hubbard

Is Addiction Genetic?

A hereditary component has long been recognized in certain patients with chronic alcoholism. Others have referred to an "addiction prone" personality, and some subjects under stress seem to be more susceptible to developing a dependency on drugs and alcohol, sometimes leading to a serious addictive disorder. People can become "addicted" to everything from gambling, shopping, and sex, to eating and thrill seeking. It has been suggested that Type A individuals sometimes become addicted to their own adrenaline, and unconsciously seek ways to increase its secretion to experience the high it creates. Some ethnic or racial groups appear to be more susceptible to certain addictive problems than others, as has been suggested in the case of native American Indians and alcohol.

Researchers have now discovered that the gene for a specific neurotransmitter receptor is present with increased frequency in cocaine addicts. This same gene was also identified more often in prior studies of alcoholics associated with other addic-

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tive problems. The relevance of this genetic finding comes from the observation that it is involved with receptor sites for dopamine, the main neurotransmitter in the limbic system "pleasure center" portion of the brain. One report revealed that the gene was present in 51% of patients with drug and alcohol dependency problems, as opposed to only 16% of non substance abusing controls. Addicts with the gene were more likely to have had an alcoholic parent, or to have engaged in "deviant behaviors" as youngsters. This gene may also be involved in other addictive disorders since preliminary observations indicate that it is also found in increased amounts in nicotine addicts and bulimia.

Science, 263:176, 1994

I can resist anything but temptation.

Oscar Wilde

The Stress Of Unemployment

As layoffs and mandatory early retirement have escalated, primary care physicians, psychiatrists, psychologists, and mental health workers, are being confronted by a corresponding rise in stress related complaints. Some common symptoms are constant headaches, insomnia, and depression, and these are most apt to occur in those who have been searching for months for any kind of employment, without success. According to one Employee Assistance professional who deals specifically with emotional problems in the workplace, those most affected are the so-called baby boomers, members of a generation "brought up to believe that you could be anything you want to be, or you could do anything you want to do". Interesting enough, workers who survive layoffs often develop many of these same stress related problems. They tend to have particularly high anxiety levels, because "they feel as if they are walking on thin ice".

At particular risk are middle aged individuals who went to work for a company early on without getting an adequate education. The particular skills they learned on the job are often so limited that they can't do anything else, and they are unprepared for

any other type of work. A major source of stress affecting all workers stems from the fundamental changes that have taken place in American corporations over the past decade. Mergers, acquisitions, and reorganizations, are causing an alarming surplus of white collar workers in urban and suburban areas, with little prospects of relief. As one authority noted, "companies are no longer benevolent employers who give life long job security to those who work for them... people have to be prepared for multiple careers. No job is safe today".

Older male managers seem to have the greatest problems dealing with sudden job loss because of the overwhelming feelings of worthlessness that follows. This filters down to wife and children, resulting in increased family fights, and sometimes child abuse. Divorce is usually not an option, because the family simply can't afford it. As financial problems worsen, the incidence of alcoholism and suicide increases. One authority pointed out that when people have to start selling their prize possessions, like stamp albums or tools, "it is a sign that they may be thinking of taking their own life". Workers who survive cuts are apt to have pangs of guilt, periods of anger, and often find their workloads increase. In some instances, this may add twenty hours or more to the work week, causing more stress and eventually burnout. Unfortunately, as one Human Resources consultant complained, business leaders don't pay much attention to the tensions that persist in workers who survive layoffs. Their attitude is apt to be 'they should be happy they have a job'.

New York Times-January 3 and 24, 1994

It's a recession when your neighbor loses his job; it's a depression when you lose yours.

Harry S. Truman

7/24 Children

Years ago, most kids went through a phase while growing up of being afraid of unknown monsters lurking in the shadows. According to a recent article in The Journal of the American Medical Association, current attempts to "master the age appropriate fears of monsters under the bed are

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severely undermined, when the child needs to sleep under the bed to dodge real bullets, or attempt to screen out the violent fights of his or her caregivers". In a survey of elementary school aged children in New Orleans, 90% had witnessed violence, 70% had seen a weapon used, and 40% had actually personally seen a real corpse resulting from a crime. In Los Angeles, as many as one out of five homicides are witnessed by children, and 10% of kids treated in the pediatric primary care clinic of Boston City Hospital had witnessed a shooting or stabbing before they were six, half in the street, and half at home. In the Big Apple, it is not unusual to hear of the random shooting and/or death of a child by stray gun fire once or twice weekly.

There are a growing number of "7/24 children", so designated, since they are kept indoors at home, 7 days a week, 24 hours a day, because of the raging violence outdoors. As these children get older and are forced to leave their homes, their only defense may be to carry a gun at all times. According to a survey conducted by The Center for Disease Control, one of every five high school students had carried some kind of weapon, and one in twenty admitted carrying a gun in the three day period prior to being interviewed. Social workers fear that "7/24 children" will become so afraid of the outside world that they will never learn or acquire the necessary social skills to function normally when they become adults.

Newsweek-March 22, 1993



"Captain Terrific has a 900 number that was on TV. I talked to him for 40 minutes about his fight against evil."

Are The Benefits Of Exercise Different For Type A's And Type B's?

Type A individuals characteristically exhibit excessive drive, time urgency, impatience, aggressiveness, hostility, and marked competitiveness. When challenged, they secrete more adrenaline and have greater rises in blood pressure and heart rate than Type B's. They also tend to have a greater denial of illness and physical complaints. One study showed that Type A subjects could exercise on a treadmill much longer than Type B's, and reported lower levels of fatigue for the same level of exertion. Regular aerobic exercise like jogging has been recommended for Type A's as a stress reduction measure, and could obviously also reduce coronary risk because of improved cardiac conditioning. However, some aggressive Type A individuals become preoccupied with constantly improving their time or distance performance, and for these competitive individuals, running might prove harmful. Unfortunately, there are comparatively few studies on the psychophysiological responses to exercise in Type A and Type B men outside of those conducted under controlled, laboratory conditions.

In a recent report, 100 male runners aged 25-45 were selected from a list of 30 Km cross country racers. The winning time was 1 hour and 40 minutes, and all individuals in this study had a finishing time between 2 and 3 hours. They were asked to run six laps on a level course of 1000 meters, with a short rest period in between each lap. The instructions were to run the first two laps slower than the pace used during the 30Km cross country race, the next two faster than the previous speed and as close as possible to the pace for the 30Km race, and for the final two laps, "somewhat faster than this, but not maximally". Heart rates were recorded throughout, and all the subjects were asked to rate their perceived level of fatigue. Subjects were classified as either having pronounced, average, or few Type A characteristics.

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In general, those with pronounced Type A traits had consistently higher heart rates in response to exercise than either of the other groups. They also significantly underestimated their degree of perceived exertion at comparable heart rates, consistent with Type A denial tendencies. These findings may be important when recommendations for how long or how fast to run are given based upon the individual's perceived sense of fatigue. Telling a flaming Type A that they can keep running as long as they don't feel too tired, might not be wise or healthy advice.

Psychosomatic Medicine 55:178, 1993

Florida Job Stress and Sick Building Syndrome

Some studies have suggested that many workers complaining of "sick building syndrome" symptoms are really victims of mass hysteria. Serious problems, like Legionnaire's Disease, can undoubtedly occur in buildings where the only air supply becomes contaminated and is constantly recirculated. However, in most instances, extensive testing fails to reveal any basis for widespread breakouts of headache, dizziness, fatigue, and nausea in otherwise healthy individuals with absolutely no objective evidence of any illness.

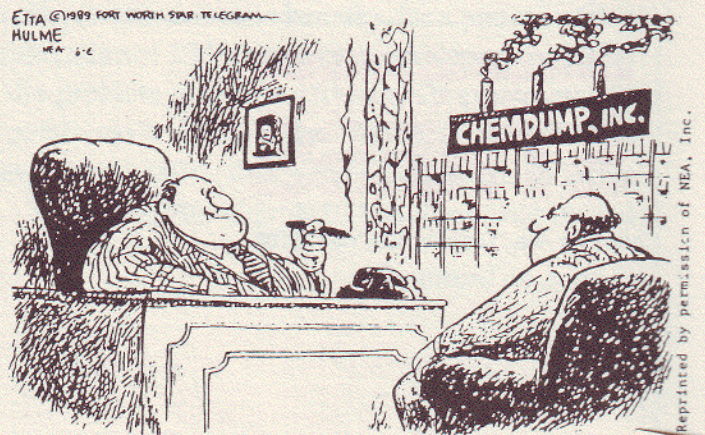
Not so in Florida, where sick building syndrome has produced plenty of predicaments. The immediate difficulty appears to be that large office buildings are constructed in accordance with northern standards, where the only source of fresh air is the air conditioning system. In Florida's sweltering heat, air conditioning systems aren't able to handle the large amounts of moisture being pulled from the air. In sealed buildings, this excess water, added to by frequent torrential rains, can collect behind the walls, promoting mildew, molds and fungi.

One example is the 11 million dollar Martin County Courthouse Complex. Within months of its opening, many of the workers in the climate controlled building began to complain of headache, nausea, skin rashes, and vomiting, with some re-

quiring hospitalization. As one explained, "the place not only smelled bad, but mold began to grow on the walls and on the judges' law books." Last year the complex was closed as a health hazard, and workers wearing respirators and bodysuits ripped out the entire air conditioning system, the dry wall, insulation carpeting, ceiling tile, and acres of vinyl wall covering. So far, 1.7 million dollars has been spent on environmental studies, attorney fees, rental of temporary quarters, and moving expenses, with some workers being housed in trailers parked behind the courthouse. Rehabilitation costs are estimated at 3.5 million and will take more than a year to complete.

This experience is far from unique. Polk County's 5 year old courthouse is 10 stories tall, finished with imported marble tile, and cost 37 million dollars to build. It has now also been evacuated due to "sick building syndrome", and it is estimated that another 20 million dollars will be required to correct the problems. One authority at the National Science Foundation, estimates that as many as 15% of all Americans may be affected by toxic indoor air, with the percentage in Florida being significantly greater. As he commented, people get "so excited about their drinking water, and we only drink 2 liters a day, yet we breathe 20 thousand liters of air a day and these poisons are directly absorbed by the lungs. It's a big problem". Some of the chemicals and organisms that may be inhaled could be carcinogenic, and at least 21 employees have filed workers' compensation claims against Martin County.

Los Angeles Times, Sun., September 19, 1993



"We take the view that if you can't stand the pollution you should stay out of the environment."

Book Reviews • Meetings and Items of Interest

Book Review

Why Zebras Don't Get Ulcers: A Guide To Stress, Stress Related Disease, And Coping, Robert M. Sapolsky, W.H. Freeman & Co., New York, 1993, \$21.95, 368 pgs.

This is an exceptional book, and it would be impossible to do justice to it in a review of this length. It provides an unusually comprehensive overview of contemporary issues and advances in stress research. Despite the complex and technical nature of some of the topics, the material is presented in a clear, down to earth, practical fashion that can be readily understood. The presentation is further enhanced by attractive illustrations and diagrams, and unusually witty and entertaining commentary. The author has a distinguished background in neuroscience, and has made particularly important contributions to the field with his reports on the effects of stress in baboons, some of which are summarized here. One of the unique virtues of this volume is the skill with which relevant observations in experimental animals are carefully extrapolated to the human condition. Every important topic is covered, including cardiovascular and gastrointestinal disorders, sex and reproduction, stress and the immune system, stress and pain, stress and depression, stress and aging, and useful tips on how to manage stress. In addition, a very insightful analysis of the history of the development of the stress concept is provided, highlighting current controversies in the field. Another attractive and unusual feature is the detailed section of explanatory notes that includes an annotated bibliography indicating the basis for various statements made on a page by page basis, identifying useful resources for those who wish further information on any topic. While targeted to a lay audience, this book should be of inestimable value to all

health professionals and researchers with an interest in any aspect of stress. It is not only easy to understand, but fun to read, and cannot be recommended too highly.

Meetings and Items of Interest

March 23 Life Balance Workshop for Working Women (#59556), Ramada Inn, Elmsford, NY, call (303) 447-2300

March 23 Understanding Psychotherapy, Cornell University Medical College, Dept. of Psychiatry, Payne Whitney Psychiatric Clinic, New York, NY, for info (212) 746-3669

March 23 The Role of Mind in Health, Disease, and the Practice of Homeopathy, The Center for Frontier Sciences Spring, 1994, Colloquia, Temple University, Philadelphia, PA, call (215) 204-8487

March 25 Acupuncture in the Treatment of Substance Abuse and Chronic Mental Illness, Cornell University Medical College, Dept. of Psychiatry, North Shore Hospital, Manhasset, NY, call (516) 562-3051

April 7-10 Acupuncture Applications in Neurologic Disorders and Pain Management, Sponsored by the University of Arizona College of Medicine, Scottsdale Hilton Resort and Spa, Scottsdale, AZ, for info call (213) 937-5514

April 13-16 Fifteenth Anniversary Meeting, "Cross-Cutting Dimensions of Behavioral Medicine: Visions for the Future", Park Plaza Hotel, Boston, MA, Contact Laura Hayman (301) 251-2790

April 15-17 9th Annual International Conference on The Positive Power of Humor & Creativity, Surviving and Thriving in the 90's, Saratoga Springs, NY, for info (518) 587-8770

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