

Medical data is for informational purposes only. You should always consult your family physician, or one of our referral physicians prior to treatment.



Chronic Fatigue Syndrome

by Charles Weber

Copyright 2002

All rights reserved by the The Roger Wyburn-Mason and Jack M. Blount
Foundation for Eradication of Rheumatoid Disease

AKA The Arthritis Trust of America®

7376 Walker Road, Fairview, Tn 37062

INTRODUCTION

Chronic fatigue syndrome (CFS) is a disease characterized by symptoms of extreme, long lasting fatigue, loss of memory [Marcel], impaired sleep, sore throat, muscle and joint aches, headache, cough, photophobia, night sweats, [Evengard] depression that has much lower ACTH and cortisol secretion than typical depression [Demitrack], lymph node pain, eye pain and fibromyalgia (muscle pain) [Bell DS] as well as white spots on MRI brain scans [Buchwald 1992] and single-photon emission computed tomography (SPECT) scans [Schwartz], loss of fingerprints in a third of the patients [Johnson p345], and a chronic low level activation of the immune system [Cannon] which last may be accounting for many of the non neurological symptoms, but all very variable, perhaps because different parts of the brain are attacked.

Women are much more often affected than men.

No one has been able to assign a definitive cause to it with certainty, although it has been proposed to be a hypochondria from misdiagnosis [Johnson p 126] or mass hysteria from reading newspaper articles proposed by the Center for Disease Control in the USA [Johnson p 135-138, 339, 342] (both very unlikely), an Epstein-Barr virus [Holmes] (because that virus antigen is often found in it as an opportunistic infection, but refuted [Buchwald 1988]), poor nutrition compounded by lack of exercise [Johnson p685], a poison [Racciatti], or a retrovirus (because fragments were detected in some of its victims similar to retrovirus) [DeFreitas]. (The retrovirus work has ended because DeFreitas has become very sick and no one else has been competent to continue her work.) That it is caused by a virus which damages the immune system is highly probable since it comes on suddenly with flu like symptoms and shows up in clusters associated with social groups [Buchwald 1992]. Fragments of mycoplasma pathogen species have been found in CFS and fibromyalgia but they are probably opportunistic infections because when multiple species are found in the same patient it correlates with the length of time CFS was present [Nasralla].

The hypothesis that CFS is a psychosomatic illness has resulted in thousands of ruined and destitute lives. There probably has not been so ruinous a result from a failed hypothesis since governor Phips ended the Salem witch craft trials. Even the blood letting of the 18th century was fairly minor. After all, how much harm can you do removing a few drops of blood? The hypothesis by medical doctors that it was not necessary to wash hands for child birth caused many deaths, but at least these mothers were given a fairly quick end. The CFS victims could not collect insurance support or disability and descended into poverty.

That hypothesis was probably an important part of the chief cause of death, suicide. It is not only in the USA that the physical

nature of this disease was denied. A young girl was taken away from her mother until the age of 18 because the mother dared to disagree with a doctor that the girl was faking her symptoms.

A poison can not be ruled out as at least a contributing factor [Bell IR], and may have been involved in the gulf war syndrome. Anthrax vaccine has been proposed as triggering gulf war syndrome with some convincing statistical evidence [http://www.house.gov/reform/hearings/healthcare/99.10.12/bates.htm].

However, I believe there may have been other medical procedures at the same time. These brave men were denied support at first also.

There have been other names for the syndrome proposed. Yuppie flu was proposed because at first only higher income people had enough money saved to hire doctors or lobby officials. Chronic fatigue immune deficiency syndrome (CFIDS) was proposed because the immune system was distorted and it was hoped that this name would gain the victims some support and research funds. After all the magic letters "ID" had gained massive support for AIDS. It would be too bad if the early cavalier attitude toward CFS resulted in adopting such a cumbersome name. Fibromyalgia, which is widespread muscular pain, was proposed as a variant of CFS and probably is. The name "myalgic encephalomyelitis" (ME) was assigned to a similar disease by medical researchers in the British Commonwealth. Post viral fatigue syndrome (PVFS) and post infectious neuromyasthenia were also used.

DISCUSSION

So the cause is unknown. This leaves us with the problem of what to do about the disease currently while we wait for researchers to figure out what direction research should take and what causes it.

It has been proposed that poor nutrition and lack of exercise are contributing factors [Johnson p 685]. It certainly is plausible that a poorly nourished body would be more at risk. A vegetarian diet using lots of raw vegetables has significantly improved the symptoms of fibromyalgia with 19 out of 30 subjects reporting considerable improvement of all symptoms after a few weeks [Donaldson]. It would be a good idea to find out what in raw vegetables was responsible. That diet gave five to six thousand milligrams of potassium per day and 460 milligrams of magnesium. It has been discovered that magnesium injections mute the symptoms significantly [Takahasha][Cox]. So magnesium supplements may be in order for CFS people who eat junk food and maybe for everyone with CFS. However, magnesium was found to be normal in the red cells in CFS patients [Hinds] and magnesium is normal in blood cells during a magnesium deficiency as well, so red cell content can not be used in diagnosis.

A whole body (cell content) analysis of potassium has found that potassium averaged a little lower in CFS than the general population [Burnet] which general population is low in potassium in our society to start with. The CFS average was about two thirds of the highest values of healthy people. This is ominous because the highest values is the normalcy which the body attempts to attain since there is no storage of potassium in the body other than the tolerable range of soluble potassium in the cell fluid. It could be that potassium supplements are in order as well. Magnesium should be part of the experiment since potassium requires adequate magnesium in order to be absorbed effectively [Petersen][MacIntyre] and it is possible that inositol [Charalampous] is necessary also. While excessive salt intakes are detrimental, it is necessary to receive moderate amounts of sodium salt because extremely low intakes also increase potassium excretion. (See a marvelous and extensive article by Mildred Seelig on the relation of magnesium to CFS and FM, in which she suggests that CFS is a magnesium deficiency [Seelig]. I suspect it is not quite

Medical data is for informational purposes only. You should always consult your family physician, or one of our referral physicians prior to treatment. that simplistic. [see <http://www.execpc.com/~cc?cimd.html>]

Experiments must be performed with caution, however, because when a patient thought to be exhibiting symptoms of fibromyalgia was brought to 5.0 mEq/l in her blood (which is close to normal) she contracted paralysis [Gotze]. This may be because experiments have shown that people who have CFS with muscle pain have normal serum potassium [<http://www.ahmf.org/rburnet98.html>] and so fibromyalgia must be a different variation of CFS. In monkeys the electrocardiogram in magnesium deficiency resembles that of high serum potassium (hyperkalemia) in spite of low serum potassium (hypokalemia) [Manitius p39]. So it is possible that lower cell potassium requires lower serum potassium for adequate nerve transmission, but the serum potassium does not drop correspondingly [Manitius p38]. If a magnesium deficiency does develop, half a year of supplements can be required for complete normalization of the affect of magnesium content on potassium. [Anonymous] If you wish to try increasing potassium by diet you may see a table which gives the relative values of potassium at; [http://members.tripod.com/~charles_W/table.html]. Considerable increases in potassium are possible without the necessity of eliminating cooking and there is less danger of imbalances with other nutrients.

It may be that meals should be more than three times per day in smaller increments since the adrenal glands in CFS patients average smaller than other people [Scott & Dinan] and their depression has much lower ACTH and cortisol secretion [Demitrack] which may be partly from the smaller glands. There is a good chance damage to the part of the brain which controls the pituitary is a more important part of that low ACTH than gland size, and therefore cortisol also, by disruption of the brain-pituitary axis [Scott & Svec & Dinan].

Also smaller meals would help prevent surges of potassium too high for those with weakened kidneys to handle efficiently as well as possibly increasing the useful cell retention.

If you would like to explore nutrition there is a good site which lists many good links organized in categories at [<http://www-sci.lib.uci.edu/HSG/Nutrition.html>] and a good site on general health information by Dr Mercola at [<http://www.mercola.com>].

Exercise has also been found to be helpful in CFS by numerous experiments [Hakkinen][Mengshoel]. Both moderate and intense exercise has shown to be helpful [Hadhazy]. However, over training can precipitate CFS [Shephard] and exercise brings on a severe fatigue which lasts for days [Johnson p329-330, 491-492] so it seems to me that exercise should be mild (such as walking [Coutts]). This is supported by an experiment which showed that exercise in a pool gave less pain, anxiety, depression, and more days of feeling good [Jentoft] than terrestrial exercise and short, mild treadmill exercise caused no obvious problem [Clapp]. I suspect that many short periods of mild exercise across the day would be the preferred routine. I suspect across the day partly because clearance of blood through the liver in order to remove electrolyte hormones such as aldosterone [Messerli] (which removal decreases potassium losses and sodium retention) is probably an important part of the value of exercise. Even robust exercise had beneficial results in some of the symptoms other than the symptoms mentioned above [Hadhazy] but it is conceivable that these patients had a different part of their brain affected by the disease. Until researchers get it figured out it would be a good idea to approach exercise cautiously and moderately.

There are many clever devices which have been invented for other degenerative diseases. There is no reason why these devices can not be made available if they can be financed by society. Societal support would be necessary for most because severe CFS is so debilitating that it is impossible for some of these people to sup-

port themselves.

The most debilitating other infirmity than fatigue is loss of memory. CFS patients should carry maps with them showing the way home and notebooks with important information like phone numbers and grocery lists and this should help considerably. For those who have lost fingerprints [Johnson p345] a good ID should always be on them and perhaps name and number imprinted on their arm by a dye.

Another procedure which should be effective would be to carry cell phones with a button which automatically dials a central office which has people on duty familiar with the important information in the patients life and which has people skilled at giving emotional support in order to deal with the depression often present.

There is evidence of opportunistic herpes infection since 77% of CFS patients contain antibodies to HHV-6 EA as IgM and IgG [Patnaik]. It may be prudent for these CFS people also to eat sparingly of foods high in arginine continuously after CFS or maybe until tests determine that the immune peptide hormones [Patarca] and natural killer cells [Caligiuri] are all normal again. This is because the amino acid arginine accentuates the symptoms of herpes [McCune] and maybe even trigger a resurgence of a dormant infection such as shingles (dormant chicken pox). Foods high in arginine are peanuts, cashews (peanuts are 50% higher than cashews but cashews are substantial), chocolate, and seeds other than the grass derived grain.

Lysine supplements may be in order also because lysine helps to mute the effects of the herpes virus significantly, reducing the occurrence (when taken routinely during the disease), severity, and healing time of herpes simplex virus [Griffith]. It probably does so by interfering with the absorption of arginine by the virus.

You may see an excellent table of nutrients including amino acids at; [http://www.nal.usda.gov/fnic/cgi-bin/nut_search.pl] (just divide the values by the Kcal figure to get valid comparisons) and a table which shows lysine and arginine values by weight of food and lysine\arginine ratios at; [<http://www.healthy.net/asp/templates/article.asp?PageType=article&ID=1744>]. Those who have CFS should not be afraid to experiment with nutrients. The human body is very resilient. As long as you do not use a poison or procedure known to be harmful, there is not much chance that irreversible harm will transpire.

Experimenting has some risk but doing nothing is even riskier. If you do come across a nutrient, combination of nutrients, or procedure or other circumstance which produces perceptible positive or negative effects, perhaps you could see yourself clear to email the information into a site which is attempting to archive such experiences at; [<http://www.casehealth.com>] and/or the author of this article at; isoptera@angelfire.com with CFS as the subject. The author will never use your name or email address for any purpose.

As to NOT eating something, the chances of irreversible harm are vanishingly small. Of course your single case history is almost useless epidemiologically (the study of health statistics). However, perhaps it could become useful if you became a member of a group which keeps records and is willing to make the records public anonymously. Millions of people eat things about which no records are kept, such as hydrogenated oils. If they are not to be studied by the people who sell them, the federal agencies, or the universities, then it would be a good idea if the people who eat food to do so.

Just do not engage in any procedures out of the ordinary which go on interminably, especially medication or pain deadeners (analgesics) as pain deadeners have been proposed as a risk factor for CFS [Johnson p574]. Also several pain deadeners have been found to damage the kidneys. Among the prescription and over the counter medications that predispose patients to such damage are acetaminophen (Tylenol, Anacin-3, Liquiprin, Panadol, and Tempra)

Medical data is for informational purposes only. You should always consult your family physician, or one of our referral physicians prior to treatment. but not aspirin [Schwarz]. Kidney damage is extremely serious. Also it is plausible that anything which can damage kidney cells could damage immune cells as well.

The chance that a pain deadener will have any direct curative affect is vanishingly small, so it usually is better to tolerate the pain if at all possible.

Depression often shows up in CFS. Therefore it is almost certainly desirable for those who love the sufferer to apply as much emotional support as possible. Good jokes, camaraderie, and tactile approval (like hugs) will not cure the disease, but there is a good chance they will mute some of the symptoms and make an eventual defeat of whatever infection is involved a little more likely. Just be sure to make kissing or eating and drinking out of the same plate not part of the procedure because there is a suspicion that the last of the two is a risk factor. Guarding the sufferer from fear and staying warm will also probably prove to be advantageous since it has been shown that staying warm enhances immunity [Hanson] and fear is well known to affect the immune hormones.

When surgery is necessary for CFS patients it is imperative that doctors become familiar with contraindications for medication because CFS patients are very susceptible to adverse reactions from some anesthetics and other medications [<http://www.sonic.net/~melissk/anesthesia.html>].

CFS is potentially extremely dangerous to society because of its severity and length of recovery time. If a mosquito ever learns how to transmit it, the situation will be desperate for society. Therefore enormous research effort should be mobilized to not just ameliorate it, but like smallpox, to eradicate it.

REFERENCES

- Anonymous 1994 Potassium and sodium and potassium in the skeletal muscle. *Laeger Ugeskr* 156; 4007-4010
- Bell DS Bell KM Cheney PR 1994 Primary juvenile fibromyalgia syndrome and chronic fatigue syndrome in adolescents. *Clin. Infect. Dis. Suppl.* 1; S21-3.
- Bell IR Baldwin CM Schwartz GE 1998 Illness from low levels of environmental chemicals: relevance to chronic fatigue syndrome and fibromyalgia. *Am. J. Med.* 105; 74S-82S.
- Buchwald D Sullivan JL Leddy S Komaroff AL 1988 "Chronic Epstein-Barr virus infection" syndrome and polymyalgia rheumatica. *J. Rheumatol.* 15; 479-82.
- Buchwald D Chenet PR Peterson DL Henry B Wormsley SB Geiger A Ablashi DV Salahuddin SZ Singsinger C
- Biddle R et al 1992 A chronic illness characterized by fatigue, neurologic and immunologic disorders, and active human herpesvirus type 6 infection. *Annals of Internal Medicine* 116; 103-13.
- Burnet RB Yeap BB Chatterton BE Gaffney RD 1996 Chronic fatigue syndrome: is total body potassium important? *Med. J. Aust.* 164; 384.
- Caligiuri M, Murray C, Buchwald D, Levine H, Cheney P, Peterson D, Komaroff AL, Ritz J 1987. Phenotypic and functional deficiency of natural killer cells in patients with chronic fatigue syndrome. *J. Immunol.* 139(10):3306-13.
- Cannon JG Angel JB Abad LW Vannier E Mileno MD Fagioli L Wolff SM Komaroff AL 1997 Interleukin-1 beta, interleukin-1 receptor antagonist, and soluble interleukin-1 receptor type II secretion in chronic fatigue syndrome. *J. Clin. Immunol* 17; 253-261.
- Charalampous FC 1971 Metabolic functions of myoinositol: VIII - Role of inositol in Na⁺-K⁺ transport and in Na⁺ and K⁺ activated adenosine triphosphate of KB cells. *Journal of Biol. Chem* 246; 455 & 461.
- Clapp LL, Richardson MT, Smith JF, et al. Acute effects of thirty minutes of light-intensity, intermittent exercise on patients with chronic fatigue syndrome. *Phys. Ther.* 1999;79:749-56.
- Coutts R Weatherby R Davie A 2001 The use of a symptom "self report" inventory to evaluate the acceptability and efficiency of a walking program for patients suffering with chronic fatigue syndrome. *J. Psychosom. Res.* 51; 425-29.
- Cox IM, Campbell MJ, Dowson D. 1991 Red blood cell magnesium and chronic fatigue syndrome. *Lancet* Mar 30;337(8744):757-60.
- Demitrack MA, Dale JK, Straus SE, Laue L, Listwak SJ, Kruesi MJ, Chrousos GP, Gold PW 1991 Evidence for impaired activation of the hypothalamic-pituitary-adrenal axis in patients with chronic fatigue syndrome. *J. Clin Endocrinol. Metab.* 73(6): 1224-34.
- DeFreitas E Hilliard B Cheney PR Bell DS Kiggunde E Sankey D Wroblewska Z Palladino M Woodward JP Koprowski H 1991 Retroviral sequences related to human T-lymphotropic virus type II in patients with chronic fatigue immune dysfunction syndrome. *Proc. Natl. Acad. Sci.* 88; 2922-2926.
- Donaldson M Speight N Loomis S 2001 Fibromyalgia syndrome improved using mostly raw vegetarian diet: an observational study. *BMC Complimentary and Alternative Medicine* 1;7.
- Evengard B Schacterle RS Komaroff 1999 Chronic fatigue syndrome: new insights and old ignorance. *Journal Intern. Med.* 246; 455-469.
- Gotze FR Thid SK Kyllerman M 1998 Fibromyalgia in hyperkalemic periodic paralysis. *Scand. Journal of Rheumatol.* 27; 383-384.
- Hadhazy VA Ezzo J Creamer P Berman BM 2000 Mind-body therapies for the treatment of fibromyalgia; a systematic review. *J. Rheumatol.* 27; 2911-8.
- Hinds G, Bell NP, McMaster D, McCluskey DR. 1994 Normal red cell magnesium concentrations and magnesium loading tests in patients with chronic fatigue syndrome. *Ann. Clin. Biochem. Sep;31(Pt 5):459-61.*
- Hanson, D.E.; Murphy, P.A.; Silicano, R.; Shin, H.S. 1983 The effect of temperature on the activation of thymocytes by interleukin I & II. *Journal of Immunol.* 130: 216, 1983.
- Holmes GP et al 1987 A cluster of patients with a Chronic Mononucleosis-like Syndrome: Is Epstein-Barr virus the cause? *Journal of the American Medical Association* 257; 2297-302.
- Jenthoft ES Kvalik AG Mengshoel AM 2001 Effects of pool based and land-based aerobic exercise on women with fibromyalgia / chronic widespread pain. *Arthritis Rheum.* 45; 42-7.
- Johnson H 1997 *Osler's Web*. Penguin's Books, Ontario Canada.
- MacIntyre I & Davidson D 1958 The production of secondary potassium depletion, sodium retention, nephrocalcinosis and hypercalcemia by magnesium deficit. *Biochem. Journal* 70; 456-462.
- Scott LV Svec F Dinan T 2000 A preliminary study of dehydroepiandrosterone response to low-dose ACTH in chronic fatigue syndrome and in healthy subjects. *Psychiatry Research* 97; 21-28
- Manitius A 1965 Some physiological effects of magnesium deficiency p28. in: *Electrolytes and Cardiovascular Diseases*, Bajusz E, editor. S. Karger, New York
- Marcel B, Komaroff AL, Fagioli LR, Kornish RJ 2nd, Albert MS. 1996 Cognitive deficits in patients with chronic fatigue syndrome. *Biol Psychiatry* 1996 Sep 15;40(6):535-41.
- Mengshoel AM Haugen M 2001 Health status in fibromyalgia - a follow up study. *J. Rheumatol.* 28; 2085-9.
- Messerli FH, et al 1977 Effects of angiotensin II on steroid metabolism and hepatic blood flow in man. *Circ.Res* 40; 204-207.
- Nasralla M, Haier J, Nicolson GL 1999 Multiple mycoplasma infections detected in blood of patients with chronic fatigue syndrome and/or fibromyalgia syndrome. *Eur. J. Clin. Microbiol. Infect.*

Medical data is for informational purposes only. You should always consult your family physician, or one of our referral physicians prior to treatment.

Dis. Dec;18(12):859-65

Patarca R Klimas NG Ligtendorf S Antoni M Fletcher MA
1994 1994 Dysregulated expression of tumor necrosis factor in chronic fatigue syndrome interrelations with cellular sources and patterns of soluble immune mediator expression. Clin Infect. Dis. Jan 18 Suppl. 1; s147-s153.

Patnaik M Komaroff AL Conley E Ojo-Amaize EA Peter JB
1995 Prevalence of IgM antibodies to human herpesvirus 6 early antigen (p41/38) in patients with chronic fatigue syndrome. J. Infect. Dis. 172; 1364-67.

Petersen VP 1963 Potassium and magnesium turnover in magnesium deficiency. Acta Med. Scand. 174; 595-604

Racciatti D Vecchiet J Ciccomancini A Ricci F Pizzigallo E
2001 Chronic fatigue syndrome following toxic exposure.. Sci. Total Environ. 270; 27-31.

Schwartz A, Perez-Canto A. 1998 Nephrotoxicity of antiinfective drugs. Int. J. Clin. Pharmacol. 36(3):164-7.

Scott LV Dinan TG 1999 Small adrenal glands in chronic fatigue syndrome: a preliminary computer tomograph study psychoneuroendocrinology 24; 759-768.

Scott LV Svec F Dinan T 2000 A preliminary study of dehydroepiandrosterone response to low dose ACTH in chronic fatigue syndrome and in healthy subjects. Psychiatry Research.97; 21-8.

Schwartz RB, Garada BM, Komaroff AL, Tice HM, Gleit M, Jolesz FA, Holman BL. 1994 Detection of intracranial abnormalities in patients with chronic fatigue syndrome: comparison of MR imaging and SPECT. Am. J. Roentgenol. 1994 Apr;162(4):935-41

Schwartz A, Perez-Canto A. 1998 Nephrotoxicity of antiinfective drugs Int. J. Clin. Pharmacol. Ther. 36(3):164-7.

Seelig M 1998 Review and hypothesis: Might patients with chronic fatigue syndrome have latent tetany of magnesium deficiency? Journal of Chronic Fatigue Syndrome 4 (2).

Submitted by The Arthritis Trust of America, 7376 Walker Road, Fairview, TN 37062-8141; <http://www.arthritistrust.org>.