

**IF MY PATIENT'S
CHOLESTEROL IS SO
LOW, WHY DOES SHE
FEEL SO LOUSY:**

**Improving quality of life in chronically
ill patients with clinical nutrition**

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The New York Times

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September 9, 2009

Summer of Work Exposes Medical Students to System's Ills

By KEVIN SACK

SEATTLE — This summer, medical students from the University of Washington took a long look under the hood of the health care system they are about to inherit, and many returned to campus last week with their eyes wide open and their idealism tempered.

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Summer of work exposes medical students to system's ills, *The New York Times*, September 9, 2009

The students learned not only to deliver babies and suture wounds, but also to order unnecessary tests as protection against lawsuits, to hector specialists into seeing Medicaid patients, to match patients with prescriptions on Wal-Mart's \$4 list. And they saw firsthand what Mr. Olsgaard called "a tidal wave of chronic disease" — diabetes, hypertension, obesity, depression — that left many questioning how much any one physician could really accomplish.

"I often wondered what we were actually doing to help people," Mr. Olsgaard said.

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"...a tidal wave of chronic illness..."

For 21 years, the University of Washington School of Medicine has dispatched its rising second-year students across the Northwest to provide primary care in rural or underserved areas. The monthlong program is elective, but a record number of students took part this year — 117 from a class of 216.

The school has a cooperative agreement to train medical students from Alaska, Idaho, Montana and Wyoming, none of which has a medical college of its own. The summer program is one of several vehicles, along with loan forgiveness enticements, designed to lure students back to their home states to practice in areas with a shortage of primary care givers.

This year, the students set out as negotiations were intensifying in Washington over wholesale changes to the health care system they will soon be joining. Whether there will be improvements to the system remains to be seen, but few students returned thinking there was little to fix.

Global Aging

The current level and pace of population aging vary widely by geographic region, and usually within regions as well, but virtually all nations are now experiencing growth in their number of older residents. While developed nations have relatively high proportions of people aged 65 and over, the most rapid increases in older population are in the developing world. Even in nations where the older percentage of the total population remains small, absolute numbers may be rising steeply. Everywhere, the growth of older populations poses challenges to social institutions that must adapt to changing age structures.

OLDER PEOPLE TO SOON OUTNUMBER YOUNG CHILDREN

Estimates of the world's population age structure at various points in the past indicate that children under age 5 have outnumbered older people. In fewer than 10 years from now this will change (U.S. National Institute on Aging and U.S. Department of State, 2007). For the first time, people aged 65 and over are expected to outnumber children under age 5 (Figure 2-1). The global population aged 65 and over was estimated to be 506 million as of midyear 2008, about 7 percent of the world's population. By 2040, the world is projected to have 1.3 billion older people—accounting for 14 percent of the total.

WORLD'S OLDER POPULATION INCREASING 870,000 EACH MONTH

The world's older population has been growing for centuries. What is new is the accelerating pace of aging. The world's older population of 506 million people in 2008 represented an increase of 10.4 million since 2007. The world's older population grew by an average of 870,000 people each month during the year. Projections 10 years hence suggest that the annual net increase will be on the order of 23 million, an average net monthly gain of 1.9 million people. In 1990, 26 nations had older populations of at least 2 million, and by 2008, 38 countries had reached the 2-million mark. Projections to the year 2040

US Census Bureau, *An Aging World: 2008*

G. Mantovani
Editor

Cachexia and Wasting

Mantovani G et al. eds., *Cachexia and Wasting: A Modern Approach*, Springer, Italy, 2006.

A Modern Approach

Co-editors

S. D. Anker, A. Inui, J.E. Morley,
F. Rossi Fanelli, D. Scevola,
M. W. Schuster, S.-S. Yeh



Springer

- “Cachexia may well represent the devastating flip side of the tremendous achievements of modern medicine, as the incidence of cachexia is also a function of survival of chronic illness.”
- “Many diseases – which rapidly led to death only a few years ago – are now better controlled by new therapies. Even if we cannot cure and eradicate these diseases, their natural history has significantly increased by months and years. Although these new therapeutic strategies represent a remarkable advantage over the previous standards of care, ***it is impossible to ignore the fact that many more patients are now facing the nutritional and metabolic consequences of prolonged immunological and hormonal challenges due to both the illness process itself and the aggressive therapies.***”

Exploring the Harmful Effects of Health Care

Charles M. Kilo, MD, MPH

Eric B. Larson, MD, MPH

WHILE VARIOUS FORMS OF HARM RESULTING from health care are well known, the full nature of such harm and the magnitude of health care's aggregate harmful effects deserve more exploration. The benefits of health care remain imprecise, and the benefits currently deliver may not outweigh the harm it imparts. In this Commentary, we explore potential harms from health care, suggest that investigators start addressing this issue.

This concern is raised with great respect for health care professionals. To be sure, ill intent is rare, and many health services are effective. Nonetheless, it is time to address the possibility of net health harm by elucidating more fully aggregate health benefits and harms of current health care. This information should help clinicians, health care leaders, policy experts, and politicians improve health outcomes by allowing more explicit consideration of the trade-offs involved in health interventions and expenditures, and help guide health care reform efforts.

Unlike health, health care is not an unalloyed good. Fisher¹ estimates that perhaps one-third of medical spending is for "services that don't appear to improve health or the quality of care—and may make things worse." Although health care contributes to health through disease prevention and treatment, the aggregate effect on health may be smaller than generally assumed.

Determinants of well-being transcend health care. They include the complex interaction over time between genetics, social circumstances, education, income, housing, public safety, job satisfaction, behavioral patterns, and environmental quality, in addition to access to appropriate health care services.² For example, since health care contributes only about 10% toward reducing premature death, even a perfectly designed delivery system would prevent only a modest proportion of premature death.³

A Taxonomy of Health Harm

Harm may occur as a direct or indirect consequence of health care. Direct harm includes adverse physical and emotional

effects, generally to individuals, as a by-product of health care delivery. Indirect harm is a collateral effect on individuals and communities not directly involved in care. Indirect harm is closely associated with excess health care costs, which may induce harm by competing with other health-producing services.

treatment with increasingly powerful medications and interventions, much consequent harm is avoidable when treatments are overused or used without sufficient evidence of effectiveness.

Some overtreatment happens when physicians lack evidence about the ineffectiveness or risks of a treatment. For example, encainide and flecainide were widely used before their harmful effects were elucidated and more than 50 000 individuals were estimated to have died from their cardiovascular effects.⁴ Rofecoxib had a similar trajectory. Medication harm may become apparent only long after widespread use.

Data on the safety and efficacy of procedures or devices may be similarly delayed. The Swan-Ganz pulmonary artery catheter was introduced in 1970 for hemodynamic management. In the 1990s, an estimated 1.2 million were sold annually at a cost of approximately \$2 billion.⁵ Although studies suggested that patients fared worse with them, it took until 2005 to clearly demonstrate their lack of benefit even in patients with severe heart failure.⁶ Demonstrating the lack of utility took decades, while consuming substantial resources and adversely affecting many individuals.

Similarly, percutaneous coronary intervention is likely being overused in the Medicare population.⁷ Contrary to national guidelines, more than half of Medicare patients with stable coronary disease lack noninvasive documentation of ischemia before elective percutaneous coronary intervention.

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Kilo CM & Larson EB. Exploring the harmful effects of health care, *JAMA*, Vol. 302, No. 1, pp. 89-91, July 1, 2009

Perceived Treatment Efficacy for Conventional and Alternative Therapies Reported by Persons with Multiple Chemical Sensitivity

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Multiple chemical sensitivity (MCS) is a condition in which persons experience negative health effects in multiple organ systems from exposure to low levels of common chemicals. Although symptoms experienced from particular chemicals vary across persons, they are generally stable within persons. The sensitivities often spread over time, first to related chemicals and then to other classes of chemicals. This study examined self-reported perceived treatment efficacy of 101 treatments used by 917 persons with self-reported MCS. Treatments examined included environmental medicine techniques, holistic therapies, individual nutritional supplements, detoxification techniques, body therapies, Eastern-origin techniques, newer therapies, prescription items, and others. The three most highly rated treatments were creating a chemical-free living space, chemical avoidance, and prayer. Both creating a chemical-free living space and chemical avoidance were rated by 95% of respondents as helpful. Results for most therapies were mixed. Participants had consulted a mean of 12 health care providers and spent over one-third of their annual income on health care costs. We discuss this drain on personal resources and describe respondents' attitudes toward the possibility of healing from MCS. **Key words:** chemical hypersensitivity, chemical injury, environmental allergy, environmental illness, environmental sensitivity, multiple chemical sensitivity. *Environ Health Perspect* 111:1498–1504 (2003). doi:10.1289/ehp.6283 [Online 9 April 2003]

Although some progress has been made in the development of a case definition for multiple chemical sensitivity (MCS) (Bartha et al. 1999) and in elucidating symptom profiles (Joffres et al. 2001), we still lack a widely accepted treatment protocol for the condition. Consequently, patients experiment with a wide variety of both conventional and holistic health treatments. Although practitioners of environmental medicine have a systematic approach for working with MCS, there is no common MCS treatment protocol accepted across medical disciplines. The field of environmental medicine espouses guidelines and techniques for addressing MCS, but critics maintain that the techniques have not been efficacious in double blind trials. Because research on treatments for MCS is sparse, people have few data on which to rely when choosing interventions. Physicians have described health findings from patient samples (Bell et al. 1995; Galland 1987; Heuser et al. 1992; Lieberman and Craven 1998; Ross 1992a) and suggested treatment strategies (Jewett 1992; Ross 1992b; Ziem 1992), but only a small number of published studies describe MCS treatment and follow-up (Lax and Henneberger 1995). In addition, only three studies to date have examined patients' assessments of a large number of health interventions for MCS (Gibson 2000; Johnson 1996, 1997a, 1997b, 1998; Leroy et al. 1996). All three studies found that chemical avoidance measures were rated as very highly effective, whereas prescription drugs were rated the least effective of all treatments.

Life impact research shows that people with MCS tend to spend a considerable amount of

their resources on health care. Johnson et al. (1996) found that persons with MCS spent an average of \$35,000 to \$45,000 annually on health care. Gibson et al. (2000) found that 8.6% of respondents reported having a health care cost of more than \$10,000 annually.

Our purpose was to describe the types and numbers of treatments used by people with MCS and to investigate perceived efficacy of those treatments. The study was not limited to conventional techniques. Rather, we sought to gather data on any techniques that respondents had tried, in an effort to understand the experience of seeking medical treatment for a poorly understood condition. We chose to evaluate retrospective reports from patients to assess the large number of treatment methods tried by this population of considerable size. Results may be helpful to patients, providers, and advocates in making decisions about resource allocation.

Methods

Participants. Participants were 917 persons contacted through the Chemical Injury Information Network (CIIN, www.ciin.org) and through MCS support groups. People learn about and become members of CIIN and other support groups through other persons with MCS, physicians' offices, small media, and the

Internet. Most groups publish newsletters with resources and informational support for persons with MCS and other interested parties. Respondents were 82% women and 95% Caucasian. Participants' ages ranged from 20 to 82 years, with a mean age of 53 years. Respondents' characteristics are presented in detail in Table 1. When asked to identify the severity of their condition, 7% identified their MCS as mild, 32% as moderate, 45% as severe, and 13% as totally disabling.

Procedure. This research, including the survey materials, was reviewed by the James Madison University Institutional Review Board. All members of CIIN were invited to respond to a mail survey that gathered

Gibson PR et al. Perceived treatment efficacy for conventional and alternative therapies reported by persons with multiple chemical sensitivity, *Environ Health Perspectives*, Vol. 111, No. 12, pp. 1498-1504, September 2003.

from the three efficacy studies done to date (Gibson 2000; Johnson 1996, 1997a, 1997b, 1998; Leroy et al. 1996), elements of environmental medicine protocol, widely used nutritional supplements, well-known body therapies and other holistic therapies, and other current treatments described to us by persons with MCS. Treatments were grouped into the following nine categories: environmental medicine/oasis techniques, holistic

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Nutrition and Critical Care

**Luc Cynober
Frederick A. Moore**

KARGER



**Baracos VE. Overview on
metabolic adaptation to
stress, pp. 1-13.**

**“An understanding of the
nature of stress is
fundamental to the rational
design of nutrient mixtures to
feed patients whose
homeostasis has been altered
by one or more stressors.”**

**“All stresses may be
presumed to be associated
with characteristic
modifications in the
metabolism of lipids,
carbohydrates, amino acids,
and micronutrients.”**



REVIEW

Acute and “chronic” phase reaction—a mother of disease

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KEYWORDS

Acute phase response;
Chronic phase response;
Metabolic syndrome;
Cellular membranes;
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Abdominal obesity;
Insulin resistance;
Growth hormones;
Free fatty acids;
Alzheimer disease;
Parkinson disease;
Neurodegenerative diseases;
Arteriosclerosis;
Coronary-vascular diseases;
Cancer;
Breast cancer;
Colorectal cancer;
Prostatic cancer;
Diabetes;
Cirrhosis;
Fatty liver;
Gallbladder disease;
Chronic renal disease;

Summary The world is in the midst of a chronic disease epidemic. Almost half of the mortality is due to these diseases. And they are associated with the consumption of calorie-dense foods, also under-consumption of a function of the innate immune system, changes induced in response to the subsequent development of chronic diseases. The endotoxin importance, and the function

of the underlying cells; their ability to obtain nutrients and antioxidants and to eliminate waste products. The abdominal adipocytes seem to play a key role, as they have the ability to in stressful situations release much of proinflammatory cytokines, PAI-1 and free fatty acids compared to elsewhere in the body. The load on the liver of these various substances is often of greater magnitude than the liver can handle. Some of the most common chronic diseases and their potential association with acute and “chronic” phase response, and with metabolic syndrome are discussed separately. The need for studies with lifestyle modifications is especially emphasized.

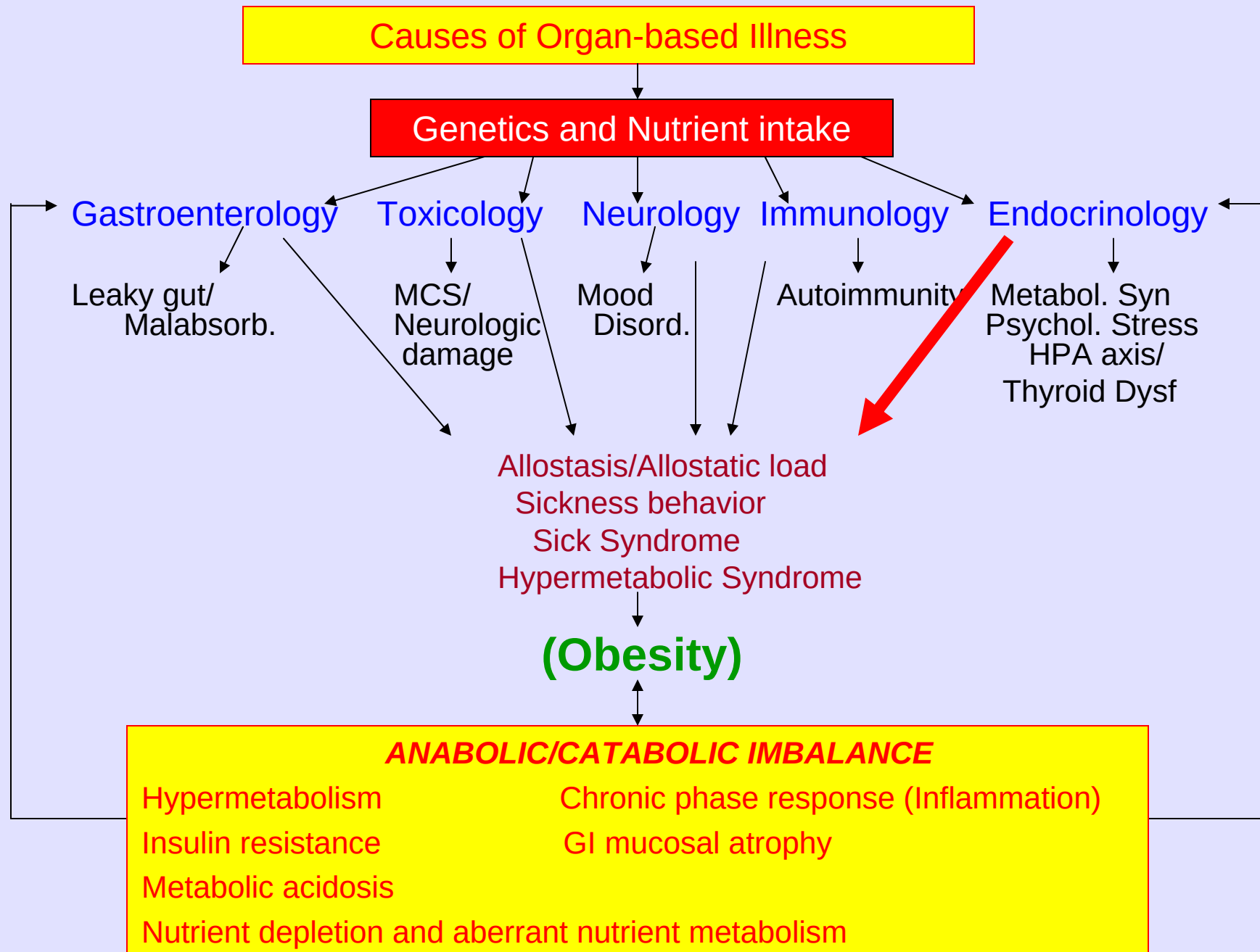
© 2004 Elsevier Ltd. All rights reserved.

Bengmark S. Acute and “chronic” phase reaction – a mother of disease, *Clin Nutr*, Vol. 23, pp. 1256-66, 2004

E-mail address: S.bengmark@ucl.ac.uk (S. Bengmark).



Components that create the clinical picture



A simplified approach to helping patients feel better

- Understanding the true nature of chronic illness: Excessive allostatic load
- Simple diagnostic tools
- A simplified menu to improve patient quality of life

<i>Metabolic Imbalance</i>	<i>Diagnostic Tools</i>	<i>Nutritional Therapy</i>
Metabolic acidosis	First morning urinary pH	Dietary changes, potassium bicarbonate, magnesium
Sarcopenia (Loss of muscle mass and strength) and low protein/amino acid intake	Percent body fat using bioelectric impedance scale and hand strength using Jamar dynamometer, blood spot amino acids (If necessary)	Dietary changes, protein/amino acid supplementation and weight-bearing exercise
Increased inflammation	Routine blood chemistry, C-reactive protein, blood pressure	Address food sensitivities and anti-inflammatory herbs and enzymes
Insulin resistance	Fasting serum glucose, cravings	Dietary changes, herbal/nutrient-based glycemic formulas
High dietary carbohydrate/protein ratio	Diet history	Dietary changes, protein/amino acid supplementation
Maldigestion/malabsorption	Patient history	Dietary changes, betaine HCl, digestive enzymes
Deficiency of often overlooked key essential nutrients such as vitamin D, zinc, and/or iodine, sleep	Serum 25-hydroxyvitamin D, serum thyroid panel, patient history, signs and symptoms, zinc taste test	Vitamin D – 1,000 – 2,000 IU per day, iodine starting at 1-2 mg per day, zinc starting at 25 mg per day. At least 6 hours of sleep. 13

- ***Does this replace functional medicine-based custom programs or condition specific approaches?***

NO

***This is a relatively easy,
inexpensive way to help
most patients feel better
early on during the course
of therapy no matter what
their “disease” or chief
complaint.***

AND:

***Functional medicine modalities
will have a higher success rate!!***

Biological Mechanism of Antidepressant Effect of Omega-3 Fatty Acids: How Does Fish Oil Act as a 'Mind-Body Interface'?

Kuan-Pin Su

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Key Words

Major depressive disorder · Depression
acid · Docosahexaenoic acid · Arachidonic acid
Prostaglandins · Thromboxanes · Leukotrienes
Phospholipase A2 · Cyclo-oxygenase

Abstract

The unsatisfactory results of monoamine-based antidepressant therapy and the high occurrence of somatic symptoms and physical illness in patients with depression imply that the serotonin hypothesis is insufficient to approach the aetiology of depression. Depressive disorders with somatic presentation are the most common form of depression. Somatization, the bodily symptoms without organic explanation, is similar to cytokine-induced sickness behaviour. Based on recent evidence, omega-3 polyunsaturated fatty acids (n-3 PUFAs, or n-3 fatty acids) are enlightening a promising path to discover the unsolved of depression, sickness behaviour and to link the connection of mind and body. The PUFAs are classified into n-3 (or omega-3) and n-6 (or omega-6) groups. Eicosapentaenoic acid and docosahexaenoic acid, the major bioactive components of n-3 PUFAs, are not efficiently synthesized in humans and should therefore be obtained directly from the diet, particularly by consuming fish. Docosahexaenoic acid deficiency is associated with dysfunctions of neuronal membrane stability and transmission

Su KP. Biological mechanism of antidepressant effect of omega-3 fatty acids: How does fish oil act as a 'mind-body interface'? *Neurosignals*, Vol. 17, pp. 144-152, 2009

prostaglandin E_2 synthesis, which might be linked to the somatic manifestations and physical comorbidity in depression. The role of n-3 PUFAs in immunity and mood function supports the promising hypothesis of psychoneuroimmunology of depression and provides an excellent interface between 'mind' and 'body'. This review is to provide an overview of the evidence about the role of n-3 PUFAs in depression and its common comorbid physical conditions and to propose mechanisms by which they may modulate molecular and cellular functions.

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Introduction

Major depressive disorder (MDD) is a serious psychiatric illness with a high lifetime prevalence rate [1]. However, the current treatment for this high-burden disease is not satisfactory. Less than 50% of patients achieve full remission with optimized medication treatment [2] despite that more than 40 antidepressants with mechanisms related to serotonin, norepinephrine and/or dopamine

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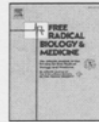
Table 1. Overlapping of symptoms of acute sickness behaviour associated with IFN- α therapy and the somatic symptoms in MDD

Symptoms	Prevalence in IFN- α therapy ^a , %	Prevalence in MDD ^b , %
Fatigue/asthenia	39–90	73
Headache	27–67	33 ^e
Gastrointestinal symptoms	50 ^{c, 1}	34–47 ^f
Psychomotor slowing	40 ^c	59–65 ^f
Insomnia	20–39 ^d	63
Irritability	35 ^d	50
Arthralgia	9–36	31 ^e
Musculoskeletal pain	26–32	62–80 ^{g, 2}
Abdominal pain	15–20	21 ^e
Anorexia	13–19	40
Anxiety	13–18 ^d	57
Poor concentration	14 ^d	51

^a [46], unless otherwise specified; ^b [99], unless otherwise specified; ^c [100]; ^d [101]; ^e [102]; ^f [103]; ^g [104].

¹ Nausea, vomiting, bowel problems.

² Result from depressed inpatient population.



Hypothesis Paper

Special relationship between sterols and oxygen: Were sterols an adaptation to aerobic life?

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ABSTRACT

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Introduction

Different sterols occur in different life forms: cholesterol is the predominant sterol in vertebrates, ergosterol in yeast and other fungi, and phytosterols are the major sterols in plants (Fig. 1). In this review/hypothesis paper, we will focus mainly on cholesterol.

help protect against, O_2 and/or reactive oxygen species (ROS) (Fig. 2).

The Rise of O_2

Three billion years ago, the earth was a third of its present age,

“...a protective effect of cholesterol against peroxidation, due either to its antioxidant action or to its capacity to stabilize plasma membrane, has been reported for a variety of systems. For example, Lopez-Revuelta and colleagues found that depletion of cholesterol from RBCs increased their vulnerability to peroxidation which could be reversed by cholesterol repletion.”



Review

Dangers, and benefits of the cytokine mediated response to injury and infection

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Soeters PB & Grimble RF. Dangers, and benefits of the cytokine mediated response to injury and infection, *Clin Nutr*, published online 2009

the inflammatory response at an individual level. A multitude of studies has shown that specific nutrients, diets, and dietary restriction are able to modulate the inflammatory response in the population as a whole. To advance in this area, precise knowledge is needed of how the disadvantageous factors, mentioned above, affect the individual's response to anti-inflammatory nutrients.

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1. Introduction

The acute phase response (APR) is a universal reaction following trauma, burns and infection.^{1–3} The universality of the response was first noted in studies by Sir John Hunter, Fellow of the Royal College of Surgeons, and Physician to King George III, who observed in 1794 in a "Treatise on Blood, Inflammation and Gunshot Wounds", that "many types of injury produce a similar inflammation". Since that time the precise mechanisms of this similarity in response have become clearer. Both the clinical and the metabolic responses after trauma are an integral part of the natural adaptation following injury that serves to facilitate recovery. However, this observation only holds true when considering the human population as a whole. The response is a 'two edged sword' and can damage as well as protect individuals. While each of the metabolic changes and cellular events, which take place during the response, are intended to contribute to the defeat of invading organisms, facilitation of

nourishment of the immune system and restoration of tissue structure and function, a successful achievement of these aims is dependent upon the intensity and timing of each component of the response. At the level of the individual, however, the orchestration of these components may be less than ideal and may contribute to raised levels of morbidity and mortality. For example prolonged and excessive loss of body protein, chronic elevation of plasma lipids and chronic impairment of insulin sensitivity may all contribute to disease in individuals. However, each of these metabolic changes, as will be discussed later, is an essential part of the overall response in the population. The response is thus designed to ensure the survival of the species rather than the survival of the individual.

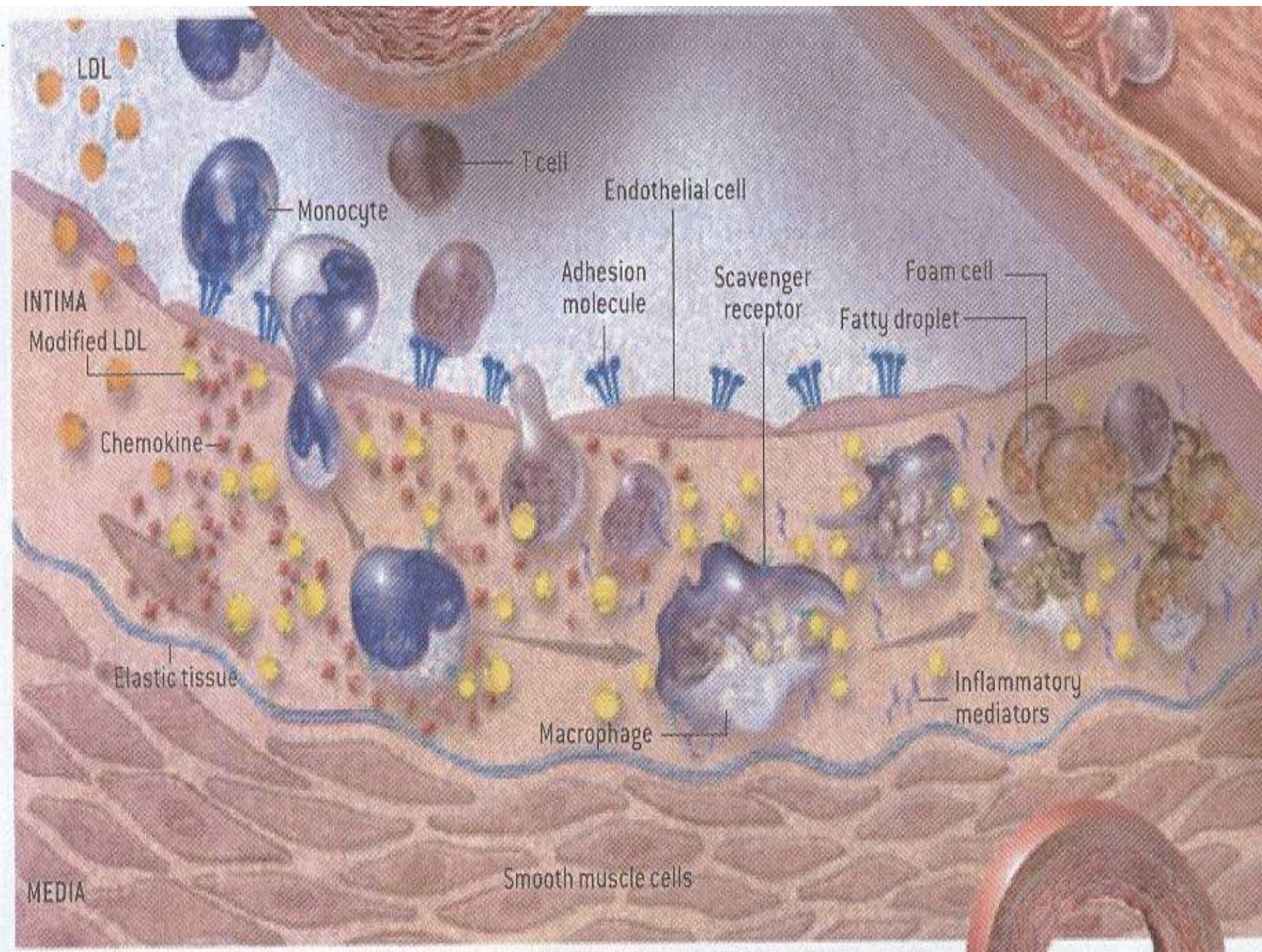
Although the common mechanisms underlying the 'similar inflammation,' noted by Sir John Hunter, have been known for more than 20 years, the reasons why the response differs with the type of injury and varies greatly between individuals, have only recently become clearer. Another conundrum, concerning the nature and outcome of the response is that, although the response is a normal part of the defenses of the body to recover from injury and repel infection, it may also increase morbidity and be fatal. In one patient a postoperative infection may cause a slight delay in wound healing, in another patient the same infection may result in a prolonged stay in the intensive care unit, or worse, death.

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- “Endotoxin, via stimulation of pro-inflammatory cytokine production, induces increased plasma lipid concentrations due to increased synthesis and secretion of triglyceride-rich lipoproteins by the liver and inhibition of lipoprotein lipase.”
- “This effect leads to hyperlipoproteinemia and hypertriglyceridemia, which increases the availability of substrate for the immune system and wound healing, but can also bind and neutralize LPS.”
- *“It has therefore been postulated that triglyceride-rich lipoproteins (very low-density lipoproteins and chylomicrons) are also components of an innate, non-adaptive host immune response to infection.”*

- *“In experimental settings it has indeed been demonstrated that lipoproteins can bind LPS, protect against LPS-induced toxicity, and play an important role in host response to LPS.”*



Components that create the clinical picture

