Ray Peat's Repairing

Last summer's death of most of Europe's seals from viral diseases suggests the possibility that their immune systems were weakened. The coincidental publication last spring of a study of the relatively remote Arctic seals of Spitzbergen,[1] which found surprisingly high levels of dioxins and other toxins in the animals, suggests that the aquatic carnivores closer to the sources of pollution might simply have been the first large group of animals to reach an intolerable level of chemical immunosuppression. The people who eat the same fish that the seals eat, and breathe the same air, might also be experiencing some degree of increased susceptibility to infections.

For several decades, the death rate from some kinds of opportunistic infection has been increasing,[2] and as bacterial infections came under control in the 1960's they tended to be replaced by less common infections such as *Pneumocystis carinii*.[3] Acquired (or secondary) immune deficiency has been a familiar phrase in immunology for at least a generation, and the recognition of the condition itself, under different terms, has been part of medical knowledge for many generations. Before 1981, typical textbooks listed cancer, chemotherapy, ionizing radiation, malnutrition, aging, parasites, fungal infections, and viral infections among the known causes of acquired immune deficiency.[4]

After 1981, the term "acquired immune deficiency syndrome" was appropriated by the molecular virologists, who were familiar with the ability of viruses to cause immunosuppression, and who, with impressive speed, determined that the "new" syndrome was caused by a certain new virus, the human immunodeficiency virus (HIV) or the human T-cell lymphotropic virus type III (HTLV-III). Peter Duesberg was one of the few molecular virologists who doubted that a virus of that sort, all by itself, could cause disease.[5] An important implication of the identification of the HIV as the cause of AIDS has been – for the molecular virologists who ignore Duesberg – that a specific vaccine or genotoxic chemical should be able to destroy the specific pathogen. Very little attention has been given to the question of whether a person's good health can be maintained despite the presence of the "viral gene." And the lingering effects of the "central dogma" of molecular genetics still discourage serious investigation of the question of whether such genes can be cleared from the genome under certain conditions without destruction of the cell.

Since human exposure to known immunosuppressants has been increasing during the years that the incidence of opportunistic infections has been growing, a real investigation of the cause or causes of AIDS will involve doing some scientific epidemiology, to learn whether some factor other than the HIV has a crucial role. Some of the factors that I have given attention to, in working with "ordinary" (i.e., complex, traditional) immunodeficiency – viz., a deficiency of the anti-glucocorticoid hormones, a dietary excess of iron and unsaturated fats,[6] a nutritional deficiency of vitamin A, folic acid, copper, and protein, an exposure to pediculocides and other chlorinated hydrocarbons including dioxins, etc. – should probably be included in such an epidemiological study. Even if such factors turn out not to be crucial in AIDS-HIV, my informal studies and observations since 1973 indicate that examining and correcting as many of them as possible can, inexpensively and safely, promote recovery from many chronic infections and other diseases associated with some degree of acquired immunodeficiency. Whatever the cause of AIDS associated with viral infection may be, it is likely that an appropriately designed supportive treatment will at least slow the progress of the disease.

In spite of a few virologists who still claim that there is no such thing as an immune stimulant, hundreds of immune-promoting substances have been studied and described, and a few of them (e.g., levamisole, inosiplex) are well-known. Although more meaningful tests are now available, skin tests have been used for several decades to demonstrate that immune stimulants or improved nutrition[7] can reliably shift the immune system from anergy to reactivity. Anything that intensifies metabolism tends to be an immune stimulant, other things being equal. A subnormal temperature is a common feature of chronic infection and early cancer, until a late stage of intense

catabolism with fever. Since most of the immune stimulants are harmless, compared to the genotoxins, the reluctance to test them is ideological, rather than scientific. My Stedman's Medical Dictionary (23rd edition) illustrates the psycho-linguistic environment: "immunodeficiency" and "immunodepressant" and "immunosuppressant" are defined in a way that any native English speaker would understand. However, "immunological enhancement" (p. 464) is explained as involving the *suppression* of cell-mediated immunity (to prevent rejection of a tissue allograft). A major part of the history of medicine seems to have dropped out of medical English.

In one line of thinking a variety of malfunctions of immunity can be created by a single factor, such as energy deficiency, acting within the organism's special history or constitutional individuality. Allergies, auto-immune disorders, and chronic infections or skin-test anergy, can be seen as aspects or phases of a generally impaired reactivity of the organism, shaped by many trophic influences of nerves, hormones, nutrition, and by toxins, temperature, radiation, etc.[8] Accordingly, I have recommended the use of techniques of immunity-promotion (or normalization) for allergies, auto-immune disorders, and chronic infections or immune deficiencies, taking into account the person's history of environmental insults, nutritional deficiency, family traits, and present hormonal, nervous, and metabolic status as far as possible.

Beginning in 1973, a clinic in Eugene, Oregon (a city which is notorious for allergies, because of the surrounding grass-seed farms which produce pollen in the spring, and smoke from field-burning in the summer and fall) had very good results with their allergy patients when they gave them supplements of vitamin A, pantothenic acid, and vitamin C. Later, thyroid extract or triiodothyronine and magnesium were added to the other supplements for patients who had problems more serious than ordinary allergies. We found that many people with acne, bladder or kidney infections, periodontitis and sinusitis seemed to be deficient in both thyroid and vitamin A even when they were taking supplements of those materials. At higher doses of both, many of those people quickly got over their infections. Many people with colitis, myositis, bursitis and arthritis had sudden relief from their symptoms on this, or a similar program. We have assumed that some toxin might be interfering with the biological effects of thyroid and vitamin A.

If thyroid and vitamin A can't be used efficiently to form steroids, a steroid imbalance is likely. Unopposed cortisol is immunosuppressive in several ways, including thymic hypoplasia,[9,10] depression of the histaminolytic activity and mono-oxygenase activity of the liver, contributing to chronic allergies,[11] and it can induce the expression of some types of retrovirus.[12] Although one of the important functions of vitamin A is its involvement in the formation of the steroids pregnenolone and progesterone (both of which moderate the effects of cortisol), it also has some hormone-like actions directly on the cells of the immune system, and it stimulates production of interleukin-2 and both inhibits generation of specific suppressor cells and limits the intensity of activation of suppressor cells.[13] The possibility of vitamin A toxicity is reduced by using the thyroid hormones and vitamin E. Pregnenolone and progesterone have a vitamin A-sparing effect, besides their direct protective action for the thymus, and they also have the very general protective action which Selye called "catatoxic." Both of these hormones have been effectively used to treat various auto-immune ailments. They tend to raise the body temperature and metabolic rate, yet they are anti-catabolic.

Vitamin A, thyroid, progesterone, and the related steroid, dehydroepiandrosterone, all oppose estrogen, which has several immunosuppressive effects, including a cortisol-like thymic atrophy, hypoactivity of T cells, and reduced production of gamma-interferon and interleukin-2, reduced natural killer cell activity, and it probably has a role in the development of some auto-immune diseases.[14] Subnormal body temperature promotes estrogen secretion.

AIDS, which has been called "slim disease" in Africa, often ends with extreme wasting. Many physicians are horrified at ➤

the thought of treating immunodeficiency with thyroid, because they associate hyperthyroidism with weight loss. Two young women, who were diagnosed as having "allergies" and supposedly auto-immune pituitary hormone deficiency, and who each weighed around 70 pounds and was considered to be "terminal" (though they both ate normal amounts of food), recovered quickly with a thyroid supplement and a diet emphasizing eggs and fruit. About 80 years ago, when surgery was first being done to remove goiters, the whole gland was removed, no supplementary thyroid hormone was given, and the patients often died of a wasting syndrome, which was named "cachexia strumipriva." Thyroid function is essential to all cell processes, including protein assimilation and synthesis, formation of growth hormone, etc. Without thyroid hormone to sustain respiration, inefficient glycolysis wastes energy; unoxidized lactate provokes catabolism of liver protein. Hypoglycemia stimulates secretion of glucocorticoids, which maintain blood sugar at the expense of rapid catabolism of protein. It is characteristic of people dying with AIDS to have no thymic tissue, as well as having other signs of extreme stress. It seems clear that a safe anti-stress, anti-cachexia, thymus-protecting program would have prolonged their life. Triiodothyronine is often the essential factor in reversing a cachectic state. Although optimal thyroid function can increase the metabolic rate, it is not catabolic because it maximizes bioenergetic efficiency.

Adamkiewicz demonstrated the importance of blood glucose in anaphylaxis and allergy.[15] In a vicious circle, histamine tends to exacerbate hypoglycemia (e.g., by its acetylcholine-like actions) and it is directly immunosuppressive in many ways. It inhibits lymphocyte proliferation in response to stimulation, it inhibits antibody formation and lymphocytotoxicity, it suppresses cutaneous delayed hypersensitivity and release of lymphokines, and it suppresses both the generation of T-helper cells and their effector functions.[16-19] Besides the ordinary antihistamines and receptor blockers, the release of histamine can be inhibited by many other substances which are immuno-protective, such as epsilon-aminocaproic acid, and by the saturated fatty acids, from pentanoic to dodecanoic.[20] These fatty acids are known to be assimilated as quickly as glucose, and so it seems likely that part of their antihistamine effect is similar to the glucose effect demonstrated by Adamkiewicz, and that both effects could be largely the result of increased availability of metabolic energy. Since tumors often contain very large quantities of mast cells, immune therapy for tumors should take histamine into account. Since 1970 I have experimented with some unconventional anti-inflammatory substances, including some of the local anesthetics, which seem to have a safe and effective antihistamine action. I think some of the anti-cholinergics which have "anti-viral" activity (e.g., amantadine) are analogous in their mechanisms of activity.

Around 1960, ammonia was found to have an "anti-viral" effect, apparently by altering the host cell's structure or function, rather than by a direct virucidal action.[21] Following that discovery, many amines were found to have some anti-viral activity. Local anesthetics, anti-cholinergics, and the anti-viral amines can be thought of as a pharmacological family. Inosiplex apparently takes advantage of some of those properties, and it too acts on the cell, rather than on the virus.[27]

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The central inhibitory system regulated by gamma-aminobutyric acid, the GABA-ergic system, is protective against stress,[22-24] and appears to protect immunity by limiting the organism's recourse to cortisol, and by supporting the synthesis of alternative steroids.[25,26] Gamma-hydroxybutyrate and its lactone are closely related to GABA metabolic pathways, and have anesthetic and anti-stress protective effects which appear to result mainly from central inhibition, and from an anti-glucocorticoid effect. The lactone has been found to have a strongly protective effect against intra-cerebrally inoculated viruses,[28] and it is remarkably non-toxic. The anesthetic and anti-convulsant effects of progesterone probably synergize with and reinforce the GABA-ergic system.

Many other substances of low toxicity have beneficial effects on the immune system or on some other aspect of resistance, and might be considered in an integrated approach to immune restoration.

Just as optimal nutrition must take age and other factors into account, an integrated therapy for immune deficiency must be sensitively designed for the needs of the individual. In many places where AIDS-HIV patients are treated, a panic mentality has taken over, and ordinary supportive therapies are neglected or rejected because they are outside of someone's "treatment protocol." A stereotyped protocol can be appropriate when therapy is directed toward the mechanistically understood elimination of a pathogen, but in therapy to strengthen immunity, individualization, alertness, and judgment are more appropriate. The complex nature of every patient should be recognized, in deciding what materials to use and how to use them.

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