Homeopathy, *Continued from Page 271*

of the doctor and his staff in eliciting comprehensive and complete information from the patient. Any experience—physical, emotional, or mental—plays a part in the health condition. The individual's history constitutes important information, not just physical ills, but also living circumstances.

A well-organized patient who prepares information prior to arriving at the doctor's office, and a well-trained staff that ensures the information is complete, will enable the doctor to spend his time with the patient elucidating the nuances and subtleties that will help him match the conditions observed in the ill patient with those given in homeopathic references as caused by particular substances.

The fundamental references for this matching process are the repertory and the materia medica. The repertory follows a format that lists parts of the body and the symptoms associated with them, plus descriptions of mental and emotional states. With each observed condition appears the name of one or more homeopathic medicines known to cause those symptoms in a healthy person. The physician then proceeds to list the names of relevant medicines associated with each symptom until he has collected a comprehensive profile of as many of the patient's symptoms as possible. Then, he must observe which of the homeopathic medicines occur most frequently, and use his intuition to select the medicine most likely to act as the similimum to the person's condition.

Generally, this methodical approach approximates the ideal more than the average work up for a patient. After all, there are more than 2000 homeopathic medicines! It is usually followed in its entirety only with chronic conditions, rather than acute. For acute conditions, a number of medicines will share common symptoms and are known as "polycrests." These will encourage the body and accelerate the cessation of discomforting symptoms. What is best about the homeopathic alternative: no side effects and no sense of "drugging."

Homeopathic medicines marketed as "combinations" are available in health/natural food stores. Generally, the bottle carries a label for a particular symptom picture, such as sore throat, varicose veins, etc., and consists of a group of polycrests, sometimes up to six together and always in low potency. Higher potencies usually come into play when the symptom picture is clear and the similimum seems apparent.

The other fundamental reference for the physician's use is the materia medica. This type reference lists the medicine, or substance, and the symptoms associated with its action in a healthy person. It is the documentation of the "provings" described above. In fact, the materia medica serves as the basis for the repertory, along with the clinical experiences of the compiling physician.

How to get started?

Currently, no accredited medical schools offer courses in homeopathy. However, a number of institutions and individuals do offer courses for physicians that can enable them to introduce homeopathic techniques and medicines into practice on a gradual, progressive basis. In addition, many good books written by practitioners *for* practitioners exist.

For further information on what to read and on study opportunities, contact: United States Homeopathic Association; 5305 Lee Highway; *Arlington, VA 22207; (703) 534-2600.*

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Immunity, Hormones and Yeast Infections

by Ray Peat, *Ray Peat's Newsletter*

In understanding candidiasis, two things, related to each other, are of special importance: the involvement of the endocrine system, and the suppression of natural immunity. Similar endocrine and immune problems can occur in other situations: cancer, aging, viral infections, and chemical poisoning. Damaged cellular respiration appears to be the common mechanism. A skin test, using Candida antigen, based on the universal exposure and acquired immune reactivity to it, shows a similar lack of response in both systemic candidiasis patients and in cancer patients. In a study of cancer patients, nutritional supplementation increased skin reactivity and survival. According to R.A. Cox, anergy of the cell-mediated immunity and a T-cell deficiency are found in chronic mucocutaneous candidiasis. In 1860, Trousseau said that candidiasis is "the local expression of a very bad state of the whole system." Similar observations have been made regarding cancer and tuberculosis.

> Thyroid, progesterone and pregnenolone help to normalize blood sugar by improving respiration, and should be the basic treatment for allergies.

Another surprising similarity between candidiasis and cancer is that the antibody reaction might be harmful, rather than helpful. According to Diamond, "high levels of specific antifungal antibodies may sometimes block or inhibit the development of cell-mediated immunity to mycoses."

Simplified ideas of the immune system were fostered by the success of vaccination against certain diseases, and by the preference of most researchers for clearly defined single-level mechanisms. Influences from the environment, nutrition, hormones, and biological rhythms make the problem more complex, but few people have recognized the importance of nonspecific immunity and the organism's general resistance. Early in this century, light therapy was recognized to be effective for tuberculosis. Coley's toxins were another early and successful attempt to stimulate the immune system. W.F. Koch, working in Gomberg's lab with free radicals, postulated that free radical oxidation was central to natural resistance to infection and cancer. Similar ideas were developed by Albert Szent-Gyorgyi, and many others contributed supporting evidence for the *importance of respiration in resistance to* disease—Otto Warburg, Max Gerson, and Broda Barnes, for example.

The two hormones, estrogen and cortisone, are associated with stress, with respiratory changes and with changes in the immune system.

A recent review article by C.J. Grossman (*Science*, Nov. 30, 1984) outlines the effects of estrogen on the immune system. Estrogen causes atrophy of the thymus, and depresses the circulating levels of thymosin alpha one: when estrogen is given to castrated rats, their serum has "a marked inhibitory effect on T-cell function," and "estrogen and androgen act mainly to suppress the cell-mediated immune system." Estrogen increases antibody production, which is not necessarily helpful in conditions such as candidiasis and cancer. Estrogen retards skin graft rejection, and this probably indicates how parasites will be handled.

An especially important effect of estrogen is its reduction of the amount of IgA antibody secreted at membranes—this is very likely to be the reason for the high incidence of vaginal yeast infections premenstrually and during pregnancy. Thyroid and progesterone both increase the secretion of IgA, and these hormones are frequently deficient premenstrually and in pregnancy.

Allergy and epilepsy consist of hyperactivity of, respectively, immune cells and nerve cells. Low cellular energy, caused by hypoglycemia or hypoxia, causes hyperactivity of any cell type; the easiest way to observe this phenomenon is in the delayed relaxation of a hypothyroid person's Achilles reflex, or a delayed repolarization wave in the electrocardiogram. Estrogen interferes with cellular energy in many ways, including a contribution to hypoxia by impairing oxygen absorption. Thyroid, progesterone, and pregnenolone help to normalize blood sugar by improving respiration, and should be the basic treatment for allergies.

Some fungi have been found to respond to the human sex steroids, estrogen and testosterone, and there is evidence for a corticosteroid receptor in Candida (D.S. Loose, *et al.*) suggesting that the yeast produces and responds to a hormone resembling cortisone. Estradiol, the most powerful human estrogen, has been extracted from a yeast (A. Burshell, *et al.*, 1984).

For many years, male beer drinkers have been known to develop breasts. Since liver damage causes abnormal amounts of estrogen to be produced and retained, the alcohol was blamed, but in the last year, enough estrogen was found in beer and wine to account for the condition, independently of any alcohol damage to the liver. Bread was also found to contain significant amounts of estrogen, from the yeast. (The increased rate of cancer which has been observed in beer drinkers might have something to do with estrogen. It would be interesting to compare the cancer incidence *among bread eaters with the incidence in peo*ple who eat tortillas, pasta, or potatoes.)

Continued on Page 275

Immunity, *Continued from Page 273*

Since early in this century, brewers' yeast was used for treating diabetes. The pancreas has an estrogen receptor, and estrogen promotes insulin secretion. Since reading of yeasts' responsiveness to sex hormones, about 15 years ago, I have encouraged people to use liver when they need a vitamin-mineral supplement, and to restrict the use of brewers' yeast mainly to the treatment of diabetes.

Besides people who are debilitated from starvation, drug treatment, or old age, the main groups who have a high incidence of Candida infection are diabetics, pregnant women, and premenstrual women. Rosalinde Hurley lists susceptible conditions, including infancy, severe infections, leukemia and other defects in cell-mediated immunity, and endocrine disease; she also mentions that the unhealthy skin near ulcers is often colonized by Candida.

A high glucose concentration in body fluids would be an obvious factor in diabetics, and in some pregnant women, but blood sugar tends to be low premenstrually. Many diabetics have high levels of cortisone, and some women do in pregnancy or premenstrually, but the consistent feature of pregnancy and the premenstrual part of the cycle is an increased production of the sex steroids.

Since progesterone used to be called the "luteal hormone," many doctors have wrongly associated it with many premenstrual events, including water retention. Most medical textbooks make the same mistake. The corpus luteum secretes both estrogen and progesterone, and when the person is under stress, progesterone production fails, while estrogen secretion continues. Progesterone deficiency and estrogen excess very often occur in the "luteal phase," premenstrually, and in pregnancy, and at menopause, with symptoms such as edema, emotional disturbances, blood clotting problems, and allergy symptoms. I think this misconception, that progesterone is "the luteal phase hormone," rather than the often deficient protective hormone, is what caused Dr. Truss to warn against its use in candidiasis patients. (Since most doctors prescribe synthetic progestins, with estrogenic and androgenic side effects, instead of natural progesterone, Truss's warning has probably helped some women to escape that maltreatment.) Because of its effects on IgA, on blood sugar and the allergic reaction, and on the body's response to stress, natural progesterone would seem to be one of the most useful materials in treating candidiasis.

In the fungi which respond to the human sex steroids, these hormones function as sex hormones, or as sex pheromones—they attract the appropriate cell type, while causing changes in the cells which prepare them for conjugation.

In cell culture, virulent strains of Candida were found to adhere to cells from human membranes, while non-virulent strains didn't adhere. Also, the virulent forms of yeast adhered to cells taken from some people, and didn't stick to cells from other people. Even *in vitro*, vaginal epithelial cells were more attractive to Candida—more yeasts adhered—when cells were from diabetics, pregnant women, or women near menstruation. This strongly suggests that glucose is not the regulating factor, since the glucose would be standardized in the culture fluid. More likely factors are estrogen, cortisone, the absence of an iron binding protein, or of bound antibodies; hypoxia causes increased cellular concentration of free fatty acids, so this is another possible factor.

The obvious next experiment will be to pretreat both yeast and donor cells with estrogens and other hormones including cortisone and testosterone, to see if virulence can be induced.

Estrogen and cortisone are things which suppress the host's immunity, and which appear to modify the fungus. Two other things, which have interesting connections with estrogen, can suppress immunity and stimulate yeast growth: unsaturated fatty acids and excess iron. Diamond has suggested that the reason candidiasis often occurs in leukemia is the high iron level in that disease; others have suggested that leukemia itself might be caused by an excess of iron, blocking the immune system. Iron (and high levels of zinc, i.e., 10mM) stimulate the formation of mycelia (Hazen and Cutler, 1983).

In a low oxygen environment, unsaturated fatty acids can stimulate yeast growth (Nes, *et al.*, 1984), and they suppress immunity in various ways.

Besides a direct effect on cellular immunity, unsaturated fatty acids interfere with thyroid function and with mitochondrial respiration. Low thyroid leads to high estrogen. Estrogen (and low thyroid) cause increased absorption of iron. At an extreme point, excess iron disturbs several endocrine glands, but at a more moderate level, it blocks cellular immunity. Combined with unsaturated fatty acids, iron stimulates peroxidation, with toxic effects, including the formation of carbon monoxide, inhibiting respiration. Vitamin C stimulates the absorption of iron, and can also increase the rate of peroxide formation. In a special disease of iron retention, idiopathic hemochromatosis, vitamin C was found *not* to increase iron *excretion* when tested by itself, though it did increase the effect of a drug called deferrioxamine (D. Conte, *et al.*, Acta Haematol. (Basel) 72(2), 117-120, 1984).

The mitochondria are not only the site of respiratory energy production, but are where cholesterol is converted to pregnenolone, which is then converted to progesterone and DHEA. These steroids all appear to protect the respiratory system. This respiratory protection is probably part of what Selye called the "catatoxic" function, the fact that certain steroids, especially pregnenolone, protect organisms against a great variety of poisons.

Whether it is an exogenous chemical, or a poison produced by intestinal organisms, or a toxic effect of damage to one's own tissue, which is making a person sick, it would seem reasonable to use a protective, "catatoxic," material such as pregnenolone as part of the supportive therapy. Fiber, oxygen drinks, and aspirin can protect the bowel.

My first experiments with yeast were with the Koch reagents, but then I got interested in testing possible anti-iron substances. Caffeine, I suspect, uses that mechanism, among others. I have also experimented with essential oils, clove oil, thymol, and menthol, and elemental sulfur, which is probably the least toxic therapy for many fungus infections of the skin, vagina, and bowel. Lime-sulfur and other sulfur mixtures have a long history as fungicides. Saturated fatty acids generally inhibit fungal growth. Short chain acids, such as acetic, lactic, propionic, and caprylic acids have often been used as anti-fungals, and even the longer chain saturated fatty acids have been tested.

Large doses of vitamin A and potassium iodide have been used, separately and together, to promote general immunity, and also to treat fungus infections; I suspect that an effect of the iodide is to protect against the toxicity of the unsaturated fatty acids.

Thiosulphate is another form of sulfur that has been used for skin fungal infections. Many herbal drugs contain quinones and saponins, which are active against fungi, but which can be dangerous to the patient. The imidazoles can be dangerous, because they block steroid synthesis in the patient as well as in the fungus. Nystatin is also believed to act on fungal steroids, and it can be toxic to the patient, but it is considered the best treatment for a deadly systemic infection (e.g., lungs, heart, kidneys). Desensitization with Candida vaccine and treatment with immune rabbit serum are discussed in R. Dubos's book, *Bacterial and Mycotic Infections of Man*. Boric acid (5%), antihistamines, and many other chemicals have some anti-fungal activity, but except for sulfur, I think the best approach is to optimize the patient's resistance.

Ray Peat's Newsletter, P.O. Box 3427, Eugene, OR 97403.

Chilies Chase Chills

With a heading, "Chilies Chase Chills," an article in the February, 1983, *American Health* magazine encouraged its readers to eat spicy food for health enhancement. Dr. Irwin Ziment, Professor of Medicine at U.C.L.A., indicates that by stimulating mucus flow, spices can help prevent and treat respiratory problems such as asthma, bronchitis, sinusitis and colds.

Dr. Ziment says, "The reason most people with chronic lung disease have problems is because abnormal mucous secretions get stuck in the lungs. We want to stimulate the lungs to produce watery secretions to loosen the mucus in the airways." Dr. Ziment doesn't address the potential cause of the excessive mucus production, which could be attributed to, among other things, food sensitivity.

It is believed that hot foods irritate the digestive tract, and cause a reflex increase in secretions from the nose and lungs. "People who eat spicy foods have less chronic obstructive lung disease than people who don't," Ziment says. He recommends that his patients with bronchitis eat one spicy meal a day, and drink lots of water. For those with G.I. tracts that can't handle such zest, Ziment suggests gargling a cup of warm water mixed with 10 drops of tabasco sauce!

Aromatic herbs, in general, are believed to act as a preventative to many ailments by insuring more complete assimilation of food nutrients. Ben Charles Harris in *Better Health With Culinary Herbs* notes, "The herb's alkaline salts combine with its aromatic principles or volatile oils and work to conteract the fat or catarrhal-forming principles of many foods." He notes that thyme has long been used in bronchitis with an age old reputation to "drive forth phlegm," an action confirmed by the U.S. Dispensatory.