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Treating candidiasis

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***Candida albicans* is a common soil fungus. It is also found as part of the normal microbial population of our body's mucous membranes. Usually it does not cause disease; however, on occasion it may cause infections of the throat, vagina and intestine.**

In most people, the low pH created by the resident acid-forming bacteria of the mucous membranes inhibits the growth of *C. albicans*. However, conditions that change the environment of the mucous membranes can lead to extensive growth of *C. albicans* with resultant disease. Candida is a classic opportunistic pathogen, normally kept in check but capable of flaring up under specific, predisposing conditions. As pathogenic fungi, the dimorphic Candida can alternate between a filamentous and unicellular form, depending on the environmental conditions of nutrition, temperature and pH. Thus, as a part of normal flora, *C. albicans* grows as budding yeast; hyphal forms are produced only during tissue invasion. This can make diagnosis of fungal diseases very difficult. The definite evidence of opportunistic fungal infection usually depends on demonstration of the fungal elements in the tissue.¹

Patients with impaired host defences secondary to diseases such as leukaemia, AIDS, Hodgkin's disease, neutropenia and other haematological diseases, or endocrinopathies including diabetes are particularly susceptible to fungal infections. In general, conditions and treatments that reduce the number or function of phagocytes or impaired cell-mediated immunity increase susceptibility to opportunistic mycoses, such as candidiasis.

Systemic candidiasis is an overgrowth of Candida throughout the entire body. In the most severe cases, Candida can travel through the bloodstream to invade every

organ system in the body, causing a type of blood poisoning called Candida septicaemia. Other names that have been given to this condition include Candida-related complex, polysystemic candidiasis, chronic candidiasis and Candida hypersensitivity syndrome.

Any of the several species of the yeast *Candida* are capable of causing candidiasis. These organisms are members of the normal flora of the skin, mucous membrane and gastrointestinal tract. *Candida* species colonise the mucosal surfaces of all humans during birth or shortly thereafter. Of more than a hundred species of *Candida* several are part of the normal flora and are potential pathogens. *C. albicans* causes most infections, followed by *C. tropicalis*.

The intact or physiologically normal epithelium is usually resistant to *Candida* invasion. However, *Candida* may invade if the skin and mucosa are traumatised or hormonally altered, or if the *Candida* attachment to endothelial cells is enhanced. Clinical manifestations are varied ranging from acute, through subacute to chronic. Involvement may be localised to the mouth, throat, skin, scalp, vagina, fingers, nails, bronchi, lungs or the gastrointestinal tract, or become systemic as in septicaemia, endocarditis and meningitis.

The debate continues as to whether candidiasis exists in the body as the result, or the cause, of some immunological diseases.

SYMPTOMS

Because candidiasis can affect various parts of the body – the most common being the mouth, ears, nose, toenails, fingernails, gastrointestinal tract and vagina – it can be characterised by a wide array of symptoms. These include:

- **Gastrointestinal tract:** constipation, diarrhoea, colitis, abdominal pain, persistent heartburn, intestinal gas and bloating, nausea, irritable bowel syndrome, 'leaky gut', and bad breath.
- **Respiratory allergy:** rhinitis, sneezing and/or wheezing, canker sores, sore throat, congestion, nagging cough, clogged sinuses, burning tongue, white spots on the tongue and in the mouth.
- **Central nervous system:** mood swings, depression, memory loss, poor concentration, anxiety, irritability, panic, 'spaced-out' feelings, autism, hyperactivity and attention deficit disorders.
- **Urogenital problems:** rectal itching, impotence, prostatitis, vaginitis, kidney and bladder infections, urinary frequency and urgency.
- **Menstrual abnormalities:** premenstrual tension, irregular menstruation, infertility, and endometriosis.
- **Skin complaints:** acne, athlete's foot, eczema, psoriasis and general 'itchiness'.

• **Other systemic symptoms:** headaches, eye disorders, muscle pain and weakness, joint pain and stiffness, numbness in the face or extremities, tingling sensations, night sweats, extreme chronic fatigue, food allergy/intolerances, craving for sugar, bread or alcohol, sensitivity to perfume and chemicals, arthritis, fibromyalgia, hypothyroidism, adrenal problems, and even diabetes. Candida can be spread through the bloodstream to give rise to widely disseminated, deep-seated mycoses such as endocarditis,² in which there is infection and inflammation of the heart tissue.

Symptoms usually worsen in damp or mouldy places, or after consumption of foods containing sugar and/or yeast. Patients with Candida infections often also have food allergies. The symptoms of a food allergy or environmental sensitivity can also mimic those of candidiasis. To further complicate matters some patients with candidiasis go on to develop environmental sensitivities as well. Because of its many and varied symptoms this disorder is often misdiagnosed. The patient generally complains of 'feeling sick all over'.

The various disparate symptoms of a patient suffering from candidiasis are actually due to gastrointestinal disturbance (gut dysbiosis). There appears to be a relationship between gut mucous membrane permeability and normal bowel flora.³ Dysbiosis results in a gastrointestinal mucous membrane that becomes abnormally permeable allowing the absorption of inadequately broken down peptides and the reabsorption of toxins from the bowel lumen leading to pharmacological effects.

EPIDEMIOLOGY

Many conditions predispose individuals to opportunistic Candida infection. Certain physiological changes in otherwise healthy individuals provide the setting for opportunistic candidiasis. The incidence of vaginal candidiasis is higher during pregnancy (due to a rise in pH) and is also increased among diabetics and women taking oral contraceptives, hormones or antibiotics. The vastly more complex hormonal system of women possibly predisposes them to more potential trouble, although men are certainly not immune to the Candida syndrome. It has been assessed that 60% of cases occur in women, 20% in men and 20% in children.⁴

Infants are especially at risk if they are heavily exposed to Candida before the normal microbial flora of the gastrointestinal tract and skin have been established. An infected mother may pass the fungal infection to her newborn. Babies usually develop oral thrush, peri-anal and genital infections, gastroenteritis with severe diarrhoea, or prolonged and painful diaper rash. Interestingly, most adults with severe cases of candidiasis experienced some of their symptoms from early childhood.

The intact adult epithelium is normally impervious to *Candida* invasion, however, certain conditions increase the opportunity of superficial candidiasis. Any trauma, burn, abrasion or break in the epithelial integrity of the skin or gut provides an opportunity for *Candida* to penetrate the skin, mucosa or subcutaneous tissue. Excessive moisture and warmth increase the number of *Candida* on the skin. Endocrinological disturbances, such as diabetes mellitus, hypoglycaemia,⁵ hypoparathyroidism and Addison's disease, result in an increased incidence of candidiasis.¹ Many medical procedures designed to prolong life also increase the likelihood of life-threatening opportunistic infections. Immunosuppressive treatment, transplantation, steroid treatment and anti-bacterial antibiotics all reduce resistance to *Candida*. Patients with AIDS are highly susceptible to candidiasis, especially involving the mucosal surfaces of the oesophagus and oropharynx. Enteric candidiasis follows the administration of tetracycline and occurs also when the yeast population is supposedly suppressed by the concomitant use of anti-fungal antibiotics. Exposure to heavy metals or metal allergy (e.g. to mercury or titanium) are also predisposing factors which can lead to candidiasis.

Disruptive factors leading to dysbiosis of the gut with consequently increased probability of candidiasis include stress, altitude changes, lack of breastfeeding,⁶ X-ray radiation,⁷ starvation, parasitic organisms, diarrhoea and constipation (intestinal flow rates),^{8, 9} low stomach acid, environmental toxins, alcohol and drug abuse, stimulants, a diet high in refined carbohydrates and nutrient-poor diets.

CLINICAL ASSESSMENT

Although laboratory tests for yeast diagnosis might be helpful, their interpretation is not always straightforward and they can sometimes be misleading. Stool cultures can also be misleading because if yeast is in its fungal form most of the cells are physically attached to the intestinal lining and a stool culture can only detect the cells that have broken off. Therefore faecal microflora may differ considerably from that of the mucosal surface of the intestinal wall, and in any case, colonic flora differs from that above the ileo-caecal valve.

Possibly one of the most reliable tests for elevated *Candida* levels is an organic acid urine test to detect by-products of yeast and fungi. Tartaric acid, a highly toxic substance that inhibits the supply of malic acid and that is needed for proper function of the Krebs cycle, is one of the organic acids found to be elevated in the presence of yeasts. The biochemical process, which is responsible for the production of most of the body's energy, is therefore short-circuited leading to symptoms of weakness, foggy thinking, depression, chronic fatigue and muscle and joint pain. Elevated organic acids including tartaric acid and low levels of malic acid have been found in a large percentage of patients with fibromyalgia.¹⁰ Furthermore, it has

been shown that 80 - 90% of children with autism, attention deficit disorder and hyperactivity similarly have abnormal levels of yeast or fungal metabolites.^{11, 12} According to antibody studies it has been found that Candida is also involved in more than 80% of all cases of Crohn's disease and colitis.¹¹

The most simple and accessible method for diagnosis is to use a questionnaire, which indicates symptoms and history.¹³ The questionnaire comprises of symptoms typically experienced by a Candida-sufferer, with a specific rating allocated to each symptom. The question is not whether or not an individual has Candida, but rather whether an overgrowth of Candida occurs. However, the surest way of confirming the possibility of a yeast infection is to embark on an anti-yeast regimen and await results. Since it is not dangerous to proceed with a trial yeast treatment programme, in the final analysis this is actually the most reliable diagnostic test.

TREATMENT REGIMEN

A safe, systematic naturopathic approach is recommended to bring Candida under control. The following six steps together form an effective anti-yeast strategy. The exclusion of any one of the steps will almost certainly lead to disappointing results. This regimen should be followed for at least 3 months.

1. Boost the immune system. Since a compromised immune system is the underlying cause of candidiasis, it is essential to boost the system with a personal supplementation programme. A wholefood supplement (e.g. a green 'superfood'), vitamin C (minimum 1 000 mg/day – ideally a buffered form) and essential fatty acids should form the basis of such a programme. Supplements must be yeast and sugar-free and digestive enzymes should be included. A 50% raw food diet is advisable, which will include juicing (fresh vegetable juices).

2. Follow a strict anti-yeast diet to starve the Candida. Yeasts are facultative anaerobes and under anaerobic conditions utilise sugars via alcoholic or lactic acid fermentations for their energy requirements. Therefore dietary glucose and sugar promote fungal growth, so all forms of sugar – sucrose, glucose, maltose, fructose and dextrose – must be avoided. No artificial sweeteners should be taken. However, the herb stevia or xylitol could be used for sweetening, but ideally the patient should overcome his or her 'sweet tooth'! Refined carbohydrates add to the glucose load. For at least the first 3 months, no fruit should be allowed. All foods containing yeast must also be eliminated, because of the high degree of apparent cross-sensitisation between Candida and other yeasts.¹⁴ Additional items to be eliminated are anything fermented (vinegar and alcohol), containing mould (cheese and mushrooms) and stimulants (tea, coffee etc.). A wheat-free diet must be followed, but ideally gluten-free for at least the first 3 months. Soy products should also be avoided and dairy

products limited. An understanding of the reasons for the dietary restrictions and a determination to get well are the keys to perseverance, and only scrupulous adherence to the diet will achieve results.

However, patients might get so focussed on what not to eat that they almost stop eating altogether. Emphasis should therefore also be placed on foods that are allowed, e.g. animal and plant protein, vegetables and whole grains. The anti-yeast diet must be strictly followed for at least 3 months. Even when Candida-related symptoms have disappeared, it is advisable to keep within the diet guidelines for a further year in order to consolidate the newly corrected balance of gut flora. Usually by this time the patient feels so good on this diet that it becomes a natural way of living.

3. Destroy the Candida through anti-fungal supplementation. There are various natural anti-fungal supplements on the market. Resistant strains of Candida develop rapidly due to genetic mutation, therefore rotating the anti-fungals is very important. Olive leaf extract with oleuropein has been found to be powerful against Candida. Propolis is an alternative anti-fungal agent, which can also be used safely in combination with olive leaf extract for greater effectivity. Caprylic acid is also known to be useful for inhibiting an overgrowth of yeast organisms. Caprylic acid is best used for destroying Candida in the gut. It is important to do this before attempting to destroy Candida in outlying tissues, because the dysbiosis within the colon is the root cause underlying Candida overgrowth in other areas of the body.

The essential oils of oregano, cloves and artemisia have great systemic anti-microbial activity, being able to reach Candida, which has colonised in tissues of the body beyond the gastrointestinal tract. Grapefruit seed extract (Citricidal) is a very effective anti-fungal, available in capsule and liquid (ideal for douching) forms. Kolorex is a patented herbal formula containing extracts of the New Zealand herb horopito (*Pseudowintera colorata*) and aniseed. Horopito contains a strong anti-fungal agent called polygodial. Pau d'arco is an extremely useful herb for Candida because it has both anti-fungal and immune-enhancing properties. Aloe vera and Warburgia are other anti-fungal agents, as is oleic acid, making olive oil a useful dietary supplement. Fresh garlic should be included in the diet, since it will not only help to bring *C. albicans* under control, but also other pathogens.¹¹

4. Detoxification. *C. albicans* releases toxins, a minimum of 79 known chemical substances. There are over 900 species of yeast, including over 80 species of Candida, at least six of which have been implicated as human pathogens. Since each strain of *C. albicans* is thought to contain up to 35 antigens and any one person may harbour more than one strain, this suggests that the sensitisation potential

is enormous, quite apart from the infectious potential through tissue invasion. The sensitisation potential of *C. albicans* is supported by studies showing that histamine release is stimulated by Candida antigens.¹¹

As yeast is destroyed, the breakdown products and toxins released can cause extremely unpleasant symptoms, both as general malaise with nausea, aching limbs and depression, and locally as an apparent flare-up of previous symptoms in areas where the Candida has colonised. German dermatologist, Dr Karl Herxheimer, first described this response when *C. albicans* was being destroyed by the use of anti-fungal substances.⁴ Usually referred to as 'die-off', it is not an unwanted reaction in the sense of a side-effect to a drug, and it should in fact be recognised as an encouraging sign. However, the symptoms can be far from pleasant and in some cases are sufficient to persuade the sufferer to give up the anti-yeast regimen.

It is therefore preferable to approach the regimen slowly but surely, and it is advisable to spend at least 1 month on the diet and immune-boosting supplement programme alone. These two factors are sufficient in many cases to cause a high degree of Herxheimer's reaction as die-off toxins start to circulate in the bloodstream. Once over this initial phase, anti-fungal supplements should be introduced at low levels and built up at intervals as die-off symptoms allow. The Candida sufferer should be encouraged to feel that s/he is in control of the situation by being responsible for the level of anti-fungal agents being taken.

It is very important to support the liver, since its detoxification pathways will have great difficulty in off-loading increased levels of toxins released by dead Candida, so they remain circulating in the bloodstream. The Ultra Clear range from Amipro is an ideal nutritional supplement to support the patient while severe die-off symptoms are being experienced. The Ultra Clear range could also be used long-term throughout the treatment regimen.

Constipation should be avoided at all costs because of the danger of reabsorption of toxins and Candida metabolites. Further, micro-organisms thrive on stagnant putrefactive matter within the intestines. Old impacted faeces do not pass from the body with ordinary bowel movements but require special techniques to dissolve the mucoid material.¹⁵ A seven-day tissue-cleansing programme together with colon irrigation¹⁶ is the most effective way of ridding the intestine of old accumulated toxic material and should be considered during the third month of the regimen. The tissue-cleansing programme also helps the body cells to release waste material. Other means of lymphatic cleansing, e.g. skin brushing and lymphatic drainage massage, are also recommended. Plenty of fluid (ideally distilled water) should be consumed on a daily basis to aid detoxification.

5. Restore dysbiosis. It is important to re-establish strong colonies of bifido bacteria in the intestines as fast as Candida is being destroyed. By re-inoculating the bowel with proper symbiotic acid-producing bacteria, there is reduction in the compatibility of the intestinal environment for yeast proliferation. Supplementation with a pre- and probiotic as the last stage of the regimen is therefore essential. A prebiotic, e.g. fructo-oligosaccharides (FOS), supports the growth of the probiotic. Supplementing with probiotics could also form part of the initial supplementation programme.

6. Emotional support. When the die-off reaction manifests as emotional disturbances (depression, morbidity, anxiety, panic, irritability and aggression), it is possible that the immune system is reacting to the presence of excess toxins in the bloodstream so that in addition to die-off there is also allergy to die-off! Furthermore, stress is a frequently ignored factor, which keeps Candida supported even in the face of an otherwise strict anti-Candida regimen. Stress is one of the greatest challenges to our immune systems, putting pressure on nearly every organ and system in the body.

The Candida sufferer is trapped in a world of pain, confusion and foggy thinking. It needs the objective insight and experience of a caring practitioner to find a way through the minefield of possible problems, to pinpoint the cause of a plateau and point the way forward. Bringing Candida under control is not an easy process; it necessitates radical dietary changes and considerable self-discipline as well as perseverance through periods of unpleasant die-off symptoms. Support from a sympathetic practitioner is as valuable to the healing process as each and every part of the treatment regimen.

GENERAL

It is important to remove houseplants while on the treatment regimen, because of cross-contamination ^{11,17} between Candida and mould, to which it is closely related, as spores from damp soil become airborne in the room and are inhaled.¹⁴ Avoid household chemical products and cleaners, chlorinated water, mothballs, synthetic textiles, and damp and mouldy places, such as basements. Dentures can be an ongoing source of Candida re-infection. Aloe vera, grapefruit seed extract or propolis may be used as a refreshing mouthwash or gargle and aloe vera can be used as an overnight denture soak. During the treatment regimen a patient should not use oral contraceptives, hormone replacement therapy or steroid medications.

Sometimes it is evident that an anti-Candida approach alone is not sufficient to achieve restoration to health. In these situations it is worth considering the possibility of parasitic infection by such organisms as *Blastocystis hominis* or *Giardia lamblia*, or an overgrowth of potentially pathogenic bacteria such as *Klebsiella*, *Helicobacter* or

Citrobacter. The presence of one of these will not only cause symptoms in its own right, but may severely compromise the body's ability to bring *Candida* under control. If no satisfactory results are achieved, treat for parasites towards the end of the anti-*Candida* regimen.

When *Candida*-related symptoms have disappeared, but food intolerance's are still experienced after the treatment regimen, a 'leaky gut' could be the cause. To treat a leaky gut while *Candida* is still actively making holes in the intestinal lining tends to be a waste of money. A leaky gut should therefore only be addressed after anti-fungals and probiotics have been introduced.

Many people experiencing ill health are discovering that it is possible to regain health if ways are found to bring an overgrowth of *C. albicans* under control.

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