To Whom It May Concern:

From: William G. Crook, M.D., President
International Health Foundation

RE: The relationship of superficial yeast infections to chronic illness.

This relationship was first reported by C. Orian Truss, M.D. in the 1970s. In spite of continuing clinical observations by several thousand physicians, most physicians have remained skeptical.

On the pages that follow you'll find a summary of the controversy and recent observations and reports which provide medical support.

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Medical Support for the Candida/Human Interaction

Introduction

The common yeast, *Candida albicans* (*Monilia albicans*), has long been recognized as the cause of...

1. Mouth infections (thrush), especially in infants or in people who have received broad-spectrum antibiotic drugs or people with weakened immune systems.

2. Vaginal infections.

3. Systemic infections in individuals with severe immune dysfunction. Scattered reports in the medical literature have also indicated that allergies to *Candida albicans* contribute to some vaginal, dermatologic, gastrointestinal, allergic and other disorders.\(^1\)-\(^{12}\)

In 1962 A. Liebeskind of Haifa, Israel described clinical studies in some of his patients with *Candida albicans* infections. Using hyposensitizing injection extracts during a period of six to ten months, thirteen out of eighteen patients got complete relief of their symptoms and the other five showed a remarkable improvement. Symptoms in these patients included gastrointestinal manifestations, bronchial manifestations and headaches, blepharo-conjunctivitis and vulvitis.\(^{13}\)

In the late 1960s Iwata, a Japanese researcher, reviewed the literature and told of his experimental work with candida toxins. He and his co-workers successfully isolated a potent, lethal toxin, *candidotoxin* (CT), from a virulent strain of *C. albicans*. They later isolated several high and low molecular weight toxins from strains of *Candida albicans*.\(^{14}\) Here are excerpts from their report.

"Candidotoxin produced unique clinical symptoms (in mice) . . . Immediately after . . . intravenous injection (of toxin) the animals exhibited ruffled fur and unsettled behavior . . . had congestion of the conjunctivae, ear and other parts of the body and finally developed paralysis of the extremities.

"When injected into uninfected mice, candidotoxin exerted toxic manifestations in spleen lymphoid cells . . . This indicates the possibility that . . . the toxin produced in the invaded tissues may act as an immunosuppressant to impair host defense mechanisms involving cellular immunity. . . ."\(^{15}\)-\(^{17}\)
Observations of C. Orian Truss, M.D.

C. Orian Truss, M.D. of Birmingham, Alabama first learned that Candida albicans could be related to a variety of systemic and nervous system problems in the early 1960s. Due to a chance encounter with a difficult patient, he noted that an injection of candida extract in this patient was followed by a dramatic improvement in fatigue, depression, vaginal discomfort and other symptoms.

During the next fifteen years, Truss noted that a number of his other patients with complex medical problems responded to an anticandida treatment program. This program included nystatin (oral antifungal medication), a low carbohydrate diet and candida immunotherapy.

Word of Truss' observations spread to a handful of other physicians and he was asked to present his observations at a medical conference in Toronto in 1977. In 1978, he published his findings in an article entitled, "Tissue Injury Induced by C. Albicans: Mental and Neurological Manifestations." 18

In 1980, Truss published further observations in a paper entitled, "Restoration of Immunologic Competence to C. Albicans." 19 In 1981, he published an article entitled, "The Role of Candida Albicans in Human Illness." 20 In 1983 he published a book, The Missing Diagnosis, 21 which was directed toward physicians and the public. Included in this book were copies of his first three articles.

In 1984, Truss published a fourth report entitled, "Metabolic Abnormalities in Patients with Chronic Candidiasis." 22 This article provided a preliminary report of laboratory studies in patients with candida-related health problems.

The design of his study was to carry out a general evaluation of protein, fat and carbohydrate metabolism in 24 patients that he considered to represent "classic cases of mold sensitivity and yeast susceptibility." A major goal of this study consisted in testing the hypothesis that acetaldehyde produced in the intestines by the fermentation of sugars by Candida albicans serves as the principle mediator of metabolic disturbances in patients with yeast-related health disorders.

In his 27-page report Truss reviews many biochemical inter-relationships and describes the methods he used in studying both the amino acids and fatty acids. Significant abnormalities were noted in both of these important components found in the human body. Because the Truss reports were published in the non-refereed medical literature, most physicians were unaware of them.

However, word of the Truss hypothesis that candida proliferation in the gut and the vagina can lead not only to allergic or hypersensitivity reactions, but also to toxic reactions, spread to the public.
During the 1980s additional reports and letters to the editor appeared in the medical literature which provided support for the role candida can contribute to generalized health problems.²³-³²

Rejection of the Truss Hypothesis

In spite of these reports, the candida hypothesis was rejected by most physicians. For example, in a report on the Candidiasis Hypersensitivity Syndrome, approved by the Executive Committee of the American Academy of Allergy and Immunology (AAAI), the following statements were made.

"The Practice Standards Committee finds multiple problems with the candidiasis hypersensitivity syndrome.

1. The concept is speculative and unproven.
   (a) The basic elements of the syndrome would apply to almost all sick patients at some time.

2. The complaints are essentially universal.
   (a) The broad treatment program will produce remission in most illnesses regardless of cause.
   (b) There's no published proof that Candida albicans is responsible for the syndrome.
   (c) There's no published proof that treatment of Candida albicans infection with specific antifungal agents benefits the syndrome.
   (d) There's no proof that immunotherapy or provocation and/or neutralization with Candida albicans extracts benefits the syndrome.
   (e) There's no proof that the recommended special studies or diagnostic tests are effective for the purposes for which they are used.

3. Elements of the proposed treatment program are potentially dangerous.
   (a) Resistant species of Candida albicans and of other pathogenic fungi may be produced by long term oral use of the major antifungal agents."
Untoward effects from oral use of antifungal agents are rare, but some inevitably will occur.

On the basis of the evidence so far reviewed and until appropriate published evidence to the contrary is brought to its attention, the Practice Standards Committee recommends that the concept of the candidiasis hypersensitivity syndrome is unproven.33

The American College of Allergy and Immunology (ACAI) published an identical proposed position statement on Candidiasis Hypersensitivity Syndrome. The Committee on Scientific Affairs of the American Medical Association (AMA) published a shorter but similar negative opinion of the role candida may contribute to a diverse group of health disorders.

In response to these statements by AAAI and ACAI, I prepared a nine-page response answering their various negative statements point by point. In spite of my response and the response of others, these organizations did not reply and they gave no indication that they would like additional information or would like to hear "the other side of the coin."

The Dismukes Study

During the late 1980s, William E. Dismukes, M.D., and associates of the University of Alabama began to study a group of polysymptomatic women using nystatin. And, in the December 20, 1990 issue of the New England Journal of Medicine, they published findings of what they termed a "randomized, double-blind trial of nystatin therapy for the candidiasis hypersensitivity syndrome." 

Dr. Dismukes and his associates evaluated a group of women with vaginitis who complained of fatigue, depression, PMS and other symptoms. In treating them, they only used oral and vaginal nystatin. According to their report, the systemic symptoms in the active treatment groups improved 25% and those in the placebo improved 23%. The investigators concluded that:

"In women with presumed candidiasis hypersensitivity syndrome, nystatin does not reduce systemic or psychological symptoms significantly more than placebo."

Flaws in the Dismukes Study

Comments by John E. Bennett, M.D.

In an editorial which accompanied the Dismukes article, Bennett, a mycologist at the National Institute of Allergy and Infectious Diseases, said:
"Few illnesses have sparked as much hostility between the medical community and a segment of the lay public as the chronic candidiasis syndrome. Those who argue for the existence of this complex of symptoms --- have leveled a serious charge against the medical community, claiming it is not fulfilling one of its most important obligations to its patients. The charge is simply put: *You physicians are not listening to your patients* [emphasis added]."

In his continuing discussion, Dr. Bennett pointed out that physicians tend to pay more attention to laboratory tests than to what their patients are saying. They also seem ...

"unwilling to learn from their patients when they claim to have been helped or cured by regimens not considered acceptable by the medical community.

"These charges are difficult to refute for a profession that appears to be spending too much time ordering and interpreting tests and not enough time talking to patients. Even more damaging is the profession's apparent refusal to study chronic candidiasis. How can science reject an idea that has not been tested when science is purportedly open to new ideas?

"Those who argue for the existence of the chronic candidiasis syndrome will complain that diet was not controlled and that it is an important aspect of treatment. In addition, candida allergy shots, injunctions to avoid moldy environments and other therapeutic approaches are often included in treatment regimens.

*In fact, none of the proponents of the syndrome have recommended the use of nystatin alone, and they are not likely to consider the Dismukes study an adequate test of their hypothesis* [emphasis added]."

In the concluding sentence of his editorial, Bennett said:

"Additional scientifically sound studies will be needed to determine whether this syndrome does or does not exist, and if it does, what the optimal treatment is for patients."

On pages 12 - 19 of this report you will find information about recent studies which will provide some of the scientific support the skeptics have been demanding.
Other Comments on the Dismukes Study

A number of professionals took exception to the Dismukes observation and wrote letters to the editor of the *New England Journal of Medicine* and to other publications. Some were published and some were not. Here are excerpts of several letters which were published in the May 30, 1991 issue of NEJM. C. Orian Truss, M.D., and associates, in analyzing the study by Dismukes and associates made a different interpretation. And they said:

"We see in these data strong support for the proposal that generalized symptoms caused by toxins or other mechanisms may accompany mucosal yeast infections."

Marjorie Crandall, Ph.D., also disagreed with the conclusions by Dismukes, et al, and said:

"I challenge the conclusion by Dismukes, et al, that the candidiasis/hyper-sensitivity syndrome 'is not a verifiable condition.' This negative conclusion is not substantiated by the results of their clinical study, which show a strikingly positive effect of the all-nystatin regimen in women with the presumed syndrome."

In my own NEJM letter to the editor, I expressed agreement with the comments of Bennett, and I said:

"Additional scientifically sound studies are desperately needed. I hope that pharmaceutical companies or the National Institute of Health will provide funds for carrying out such studies. . . . I would especially urge the investigators to look at the important role (and intricacies) of diet. A diet low in sugar (and other simple carbohydrates) was an essential part of the treatment program first outlined by Truss."

I also received copies of letters which were sent to NEJM by a number of other candida clinicians which were not published, or were published in other periodicals. Here are several of them.

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There's no hope of successful treatment of this problem without dietary restrictions.

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"Candida-related illness is never an illness unto itself... Patients who suffer from almost any dysfunction related to candida... always have food intolerances and these may be severe. Generally sugar in virtually any form is the most consequential offender. ... Candida-related illness must always be treated, at least initially, with stringent dietary control in addition to any antifungal therapy. ... There is practically no hope of successful treatment of this problem without dietary restrictions." W. A. Shrader, Jr., M.D.

"I would like to report that I have now treated over 5000 patients using Truss' protocol. I have seen the dramatic multisystem improvement in the majority of these people, just as described by Truss, Crook and others—Not one of Truss' critics referenced by Dismukes and Bennett has ever reported treating a single patient using Truss' complete protocol. I would like to recommend that any researcher who evaluates Truss' protocol, use Truss' protocol." Dennis W. Remington, M.D.

"It is very difficult to treat a yeast problem with a one-pronged approach. The startling aspects of their paper, however, is that they ignored the diet. Some women need only to eat a bar of candy and they develop an immediate vaginal discharge. The study is sort of analogous to designing a study on diabetes and insulin while letting the patients eat sugar..." Doris J. Rapp, M.D.

**Observations of Carol Jessop, M.D.**

At the April 1989 conference on Chronic Fatigue Syndrome sponsored by the San Francisco Department of Public Health, the San Francisco Medical Society, the University of California (SF) Department of Medicine and the University of California (SF) School of Nursing, Carol Jessop, M.D., Diplomate, American Board of Internal Medicine, and assistant Clinical Professor of Medicine at UCSF, described her experiences. Here's a report of Dr. Jessop's presentation.

She urged more physicians to listen to complaints from fatigued patients..."Often such patients 'feel abandoned' by the traditional medical community."

"Beginning last year, Dr. Jessop treated 900 of her CFS patients with ketoconazole, a drug used to treat candidiasis, and placed them on a sugar-free diet. Since then 529 have returned to their previous health and another 232 have shown improvement."

Dr. Jessop said that her patients have taught her about CFS. She said, "I didn't learn it in medical school." She urged more physicians to listen to complaints from fatigued patients.
'Often such patients 'feel abandoned' by the traditional medical community.'

In a subsequent presentation at a November 1990 conference sponsored by the CFIDS Association, Inc., in conjunction with the Charlotte Area Health Education Center, and other organizations, Jessop discussed her findings in working with 1324 patients with Chronic Fatigue Syndrome seen between 1984 and 1990. Jessop said:

"Bacterial, viral, fungal and parasitic agents need to be examined as possible contributors to this disease. . . . If they have a yeast overgrowth, my treatment of choice is three weeks of fluconazole (Diflucan), 100 mgs. daily [emphasis added]."

In her foreword to my 1992 book, Chronic Fatigue Syndrome and the Yeast Connection, Jessop said, "Ten years ago I was very frustrated working with CFS patients because of deeply ingrained skepticism about theories such as the 'yeast connection.' However, following further research and a trial of some of these therapeutic interventions with my patients, my work has become both intellectually rewarding and fun."

Comments of Other Physicians

In a statement discussing candida-related illness in September 1989, Douglas H. Sandberg, M.D., Professor of Pediatrics, Director, Division of Gastroenterology and Nutrition at the University of Miami, said:

"Confirmation of the diagnosis remains difficult, evaluation of efficacy of therapeutic measures incomplete; and tools for monitoring a therapeutic response are below the standards we've come to expect in modern medical practice.

"In spite of these shortcomings, I'm convinced that this disorder exists and that it is important. It must be considered in differential diagnosis of patients with a variety of chronic complaints. Since diagnosis at times can be made only through determining response to a therapeutic trial, some patients would have to be treated without a firm diagnosis prior to institution of therapy."

In an October 14, 1993 statement, James H. Brodsky, M.D., a diplomate of the American Board of Internal Medicine, and a member of the American College of Physicians, Alpha Omega Alpha and other organizations, commented:

"Since my introduction to the relationship between yeast and human illness in the early 1980s, I've seen well over 1000 patients with some form of yeast-related illness. . . . I maintain a general internal medicine practice and make hospital rounds daily. While I find all aspects of my practice fulfilling, nothing has been so rewarding as helping patients with yeast-related illnesses who have been unable to find help elsewhere."
Clinical Reports of the Effectiveness of a Therapy Often Precede Scientific Studies

Clinical reports that describe the effectiveness of a particular method of therapy may precede by decades (or even centuries) the scientific studies which provide support for the therapy.

Many therapies used in medicine today continue to be used because physicians (and non-physicians) have found that they work. Moreover, many such therapies are safe and inexpensive. Yet, information about how and why a therapy works may not be known.

Over ten years ago, two physicians from the University of New Mexico School of Medicine published a fascinating article entitled, "The Tomato Effect." In the article they told about the rejection of tomatoes by North Americans for over 300 years because people thought they were poisonous. And they said:

"Not until 1820 when Robert Gibbon Johnson ate a tomato on the steps of the courthouse in Salem, New Jersey, and survived, did the people of America begin--grudgingly--to consume tomatoes. The tomato effect in medicine occurs when an efficacious treatment for a certain disease is ignored or rejected because it does not 'make sense'..."

If you review medical history, you'll find many examples of the "tomato effect." And in their continuing discussion, Drs. Goodwin and Goodwin said:

"Modern medicine is particularly vulnerable to the tomato effect. Pharmaceutical companies have... turned to theoretical over practical arguments for using their drugs... the only three issues that matter in picking a therapy are: Does it help? How toxic is it? How much does it cost?"

In an editorial published the following year entitled, "The Gold Standard," Gene H. Stollerman, M.D., Professor of Medicine, Boston University School of Medicine, seemed to me to express a somewhat similar conclusion when he said:

"As the insights of medical bioscience and technology increase our medical powers, I find renewed strength in my clinical skills... Clinical experience is the gold standard on which patient care should be based."
Several thousand physicians in practice and a handful of academicians have found that a sugar-free special diet and nystatin, ketoconazole (Nizoral), fluconazole (Diffucan) or itraconazole (Sporanox) are effective in treating patients with a diverse group of health problems. These range from PMS, chronic fatigue syndrome, interstitial cystitis and psoriasis in adults to recurrent ear infections and other respiratory infections and the subsequent development of hyperactivity, attention deficits and autism in children.


15. Iwata, K, Recent Advances In Medical and Veterinary Mycology, University of Tokyo Press, 1977.


21. Available from: The Missing Diagnosis, P. O. Box 26508, Birmingham, AL 35226 ($8.95 + $2.75 shipping and handling).


33. Statement of the Practice Standards Committee, American Academy of Allergy and Immunology, *Journal of Allergy and Clinical Immunology*, 78:271-73, 1986.
Reports in the Mid-90s Which Support the Relationship of Superficial Yeast Infections to Chronic Health Disorders

Multiple Sclerosis

In his observations on candida-related health problems, Dr. C. Orian Truss described the response of a number of his patients with severe autoimmune diseases to nystatin and a low carbohydrate diet. Included were brief descriptions of several of his patients with multiple sclerosis.

One of these patients was a 30-year-old woman who showed many of the symptoms and signs of MS, including numbness, tingling, reflex changes, visual defects and a slight elevation of her spinal fluid protein. In addition, she gave a history of receiving many antibiotics, digestive problems, vaginal symptoms and other health problems. She was placed on diet and nystatin therapy and after two years on such therapy a neurological examination was "entirely normal."

When this therapy was discontinued, a number of her symptoms began to return. She was again placed on nystatin and in a subsequent report, Dr. Truss stated:

"She is entirely well now seven years after nystatin was begun."

In this same report, Dr. Truss described the response of another young woman with MS who was given nystatin and diet.

"She started improving immediately and was asymptomatic by eight months unless ... she would go 'on a carbohydrate binge.' This would induce abdominal bloating, diarrhea, and faint suggestions of tingling in her extremities."

In discussing multiple sclerosis and other autoimmune disorders in The Yeast Connection, I said:

"Candida isn't THE cause of these often devastating disorders—but, there's growing evidence based on exciting clinical experiences of many physicians that there is a yeast connection."

Reports of My Patients

In my discussions of MS in The Yeast Connection, I told about my experiences in treating MS in several of my patients with anti-candida therapy. In my 1995 book, The Yeast Connection and the Woman, I included a follow-up on two of these patients, Bobby Carter and Dorothy. I reported that their MS symptoms continued to be controlled as long as they followed a sugar-free special diet and took antifungal medication.
Comments of Neurologist R. Scott Heath, M.D.

In January 1993, I received a letter from Dr. Heath who expressed an interest in the relationship of *Candida albicans* to neurological problems, including MS. In December 1993, I had a two-hour visit with Dr. Heath and he told me about his experiences. Then in January 1994, I interviewed him. Here's what he had to say:

"Sometimes I've felt sort of like a voice in the darkness . . . just as you have felt. Yet, I have seen a number of people who have unusual symptoms, including fleeting numbness, transient speech problems and vision complaints. In such patients, I often can't find anything wrong neurologically. Obviously, my concern is simply this: do they have MS or don't they?

"I've been impressed over the years that people with MS who do not have spots on their brain generally do well on the antifungal treatment. Also, when people DO have spots and we make a diagnosis of MS, they do better too. They have fewer exacerbations . . . [emphasis added]."

In the continued discussion, Heath pointed out that he had found a definite link between a flare-up of his patients' MS following treatment with antibiotics.

Following my visit with Heath I passed along his observations to Douglas Webb, Ph.D., Director, Anti-Infectives, Medical Department, Pfizer, Inc. In June 1994, this corporation made an initial grant of $60,000 to the International Health Foundation to support studies on the relationship of superficial yeast infections to chronic illness, and multiple sclerosis was the first illness selected. Here are excerpts from a news report by Sue McDonald published in the Wednesday, September 14, 1994 issue of the *Cincinnati Enquirer*.

**YEAST CONNECTION, REVISITED**

Is there a connection between multiple sclerosis and an overgrowth of yeast in the body?

A tri-state neurologist who's teaming with a Tennessee physician who has written several books on the health effects of *Candida albicans* . . . to test whether an overgrowth of yeast can affect symptoms in people with multiple sclerosis.

"I think this is something where we should at least consider the possibility," says neurologist Dr. Scott Heath, who is recruiting five men and five women, ages 18 to 45 with MS, to participate in a year long study.

In his 17 year practice, Heath has found the MS symptoms—numbness and weakness, for example—frequently worsen or reappear after patients have been treated with antibiotics. Antibiotics can upset the natural balance of microorganisms of the body and cause yeasts to multiply.

Dr. William G. Crook, author of *The Yeast Connection*, will help coordinate the pilot study from his International Health Foundation offices in
Jackson, Tennessee. Heath and Crook will test whether an anti-yeast drug, Diflucan, can influence the severity and frequency of symptoms in people with MS. Crook will educate patients about controlling yeast through diet and other lifestyle changes.

Patients also will be monitored monthly and undergo blood tests and an MRI (magnetic resonance image) at Northern Kentucky Rehabilitation Hospital in Edgewood.

**Asthma**

**Reports on the Successful Use of Antifungal Drugs in Patients with Persistent Asthma**

According to an abstract published in the January 1994 *Journal Of Allergy and Clinical Immunology*, Belgian researchers stated that they had observed several asthmatic patients who improved during treatment with ketoconazole (Nizoral®).* They then set up a study to investigate the possible effect of this drug in other asthmatic patients.

Ten corticosteroid-dependent asthmatic patients, aged 13-62 years, without evidence of fungal infection (emphasis added), entered a double-blind, placebo-controlled study; five of the patients received ketoconazole 200 mgs. once daily, while five received a placebo. The program was carried out for four weeks.

Lung function testing was performed before the study, after the second week of treatment and after the fourth week of treatment. Four out of five of the patients given the drug improved in two weeks, while four out of five of those who received the placebo did not improve.

*The researchers concluded that ketoconazole might be beneficial in some asthmatic patients* [emphasis added]. They stated that further studies are needed to investigate the mechanism of action and a possible steroid-sparing effect of ketoconazole in asthma.

A related study was carried out at the University of Virginia. Here is an abstract of this study which was published in the January 1994 *Journal of Allergy and Clinical Immunology:* **

"In a previous study we reported a series of 12 male asthmatic patients with fungal infection of the feet and specific sensitivity of their lungs and noses to *Trichophyton tonsurans* (T. tons) (Lancet 1989, 1:859-862).

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"We also reported that 8 of the 12 patients showed clinical improvement with oral griseofulvin or local clotrimazole therapy. In the current controlled study, ten Trichophyton allergic asthma patients (9 male and 1 female) have been randomized to receive either 22 weeks or 44 weeks of oral fluconazole at 100 mgs. daily.

"After the 10 months of the study specific bronchial reactivity to T. tons had shown a definite decrease in 9 to 10 patients tested, whereas nonspecific reactivity to histamine had shown little changes.

"No adverse reactions to fluconazole have been noted in these ten patients even in those maintained on fluconazole for up to 2 years.

"Although the study is continuing, the results show that usage of a systemic oral antifungal agent reduces the specific bronchial responses to Trichophyton antigen.

"In those selected patients antifungal therapy was also associated with overall clinical improvement, including reduction in asthma symptoms, improvement in onychomycotic toenail changes and in 8 cases progressive reductions in steroid dosages."

In the March 1995 issue of Cutis, Claude A. Frazier, M.D., an Asheville, North Carolina allergist, commented, "Could not the steroid inhalants used by asthmatics lead to pulmonary fungal infection? If so, this could explain the benefits of systemic antifungal agents seen in asthmatics."

Psoriasis

In previous brief reports in The New England Journal of Medicine and the Archives of Dermatology, researchers from the University of Tennessee reported on an association between intestinal yeast and psoriasis*. In 1994 researchers published further observations.


Psoriasis of the Palms and Soles Is Frequently Associated with Oropharyngeal Candida albicans

ROBERT B. SKINNER, JR.,¹ E. WILLIAM ROSENBERG¹,² and PATRICIA W. NOAH¹,³

Departments of ¹Medicine (Dermatology), ²Community Medicine, and ³Pathology, University of Tennessee College of Medicine, Memphis, Tennessee, USA

Patients seen at our psoriasis clinic are studied for the possible presence of microbial factors that might be activating the disease. We have previously reported associations between certain clinical variations in the appearance of psoriasis and specific microbial findings (1).

Here we report 14 patients in whom palmar/plantar psoriasis was associated with the recovery of Candida albicans on culture from their throat and/or dental plate (Table I).

### Table I

<table>
<thead>
<tr>
<th>Case no.</th>
<th>Age</th>
<th>Sex</th>
<th>Duration</th>
<th>Clinical description</th>
<th>C. albicans culture</th>
<th>Dental plate present</th>
<th>Treatment</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>40</td>
<td>M</td>
<td>17 y</td>
<td>Red palms</td>
<td>+ Throat</td>
<td>-</td>
<td>Fluconazole</td>
<td>No response</td>
</tr>
<tr>
<td>2</td>
<td>63</td>
<td>F</td>
<td>20 y</td>
<td>Thick scale soles &amp; palms, moderate erythema</td>
<td>+ Throat &amp; dental plate</td>
<td>+</td>
<td>Nystatin</td>
<td>Improved</td>
</tr>
<tr>
<td>3</td>
<td>37</td>
<td>F</td>
<td>5 y</td>
<td>Scaly, red palms &amp; soles</td>
<td>+ Throat &amp; dental plate</td>
<td>+ (5 years)</td>
<td>Fluconazole</td>
<td>Pending</td>
</tr>
<tr>
<td>4</td>
<td>64</td>
<td>F</td>
<td>8 m</td>
<td>Thick palms &amp; soles</td>
<td>+ Throat</td>
<td>-</td>
<td>Nystatin</td>
<td>Pending</td>
</tr>
<tr>
<td>5</td>
<td>39</td>
<td>F</td>
<td>5 y</td>
<td>Red, thick scale on palm</td>
<td>-</td>
<td>+</td>
<td>Ketoconazole</td>
<td>Cleared</td>
</tr>
<tr>
<td>6</td>
<td>49</td>
<td>M</td>
<td>-</td>
<td>Red, cracked fissured palms</td>
<td>-</td>
<td>-</td>
<td>Fluconazole, nystatin</td>
<td>Lost to follow-up</td>
</tr>
<tr>
<td>7</td>
<td>69</td>
<td>F</td>
<td>10 m</td>
<td>Red palms</td>
<td>+ Throat &amp; dental plate</td>
<td>+</td>
<td>Nystatin, ketoconazole</td>
<td>Nystatin no help; ketoconazole improved</td>
</tr>
<tr>
<td>8</td>
<td>43</td>
<td>M</td>
<td>6 m</td>
<td>Scaly palms</td>
<td>-</td>
<td>-</td>
<td>Nystatin, ketoconazole</td>
<td>Nystatin no help; ketoconazole improved</td>
</tr>
<tr>
<td>9</td>
<td>30</td>
<td>F</td>
<td>6 m</td>
<td>Very red, scaly palms &amp; soles; pustules on feet</td>
<td>+ Throat</td>
<td>-</td>
<td>Nystatin, Ketoconazole</td>
<td>Ketoconazole improved, fluconazole cleared</td>
</tr>
<tr>
<td>10</td>
<td>37</td>
<td>F</td>
<td>2 y</td>
<td>Pink, scaly palms &amp; soles</td>
<td>-</td>
<td>-</td>
<td>Nystatin yogurt</td>
<td>Improving</td>
</tr>
<tr>
<td>11</td>
<td>58</td>
<td>F</td>
<td>15 y</td>
<td>Red, scaly palms &amp; soles</td>
<td>-</td>
<td>-</td>
<td>Nystatin</td>
<td>Lost to follow-up</td>
</tr>
<tr>
<td>12</td>
<td>56</td>
<td>F</td>
<td>1 y</td>
<td>Red, scaly palms &amp; soles diabetes</td>
<td>+ Throat &amp; dental plate</td>
<td>+</td>
<td>Ketoconazole, then fluconazole</td>
<td>Ketoconazole improved; fluconazole improved further</td>
</tr>
<tr>
<td>13</td>
<td>69</td>
<td>F</td>
<td>10 y</td>
<td>Red palms</td>
<td>+ Throat &amp; dental plate</td>
<td>+</td>
<td>Nystatin</td>
<td>Cleared</td>
</tr>
<tr>
<td>14</td>
<td>57</td>
<td>F</td>
<td>6 m</td>
<td>Red palms</td>
<td>+ Throat &amp; dental plate</td>
<td>+</td>
<td>Nystatin</td>
<td>Pending</td>
</tr>
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</table>

TREATMENT

Patients were treated with oral nystatin, fluconazole, or ketoconazole. Nine patients were evaluable following adequate treatment. Of these, 7 were cleared or substantially improved.

DISCUSSION

Baker (2) and Crutcher et al. (3) have previously reported the usefulness of oral nystatin in the treatment of psoriasis, presum-
ably by virtue of its effects on candida residing in the gastrointestinal tract.

Wachowiak (4) found Candida more prevalent in stools of psoriasis patients than in controls. Hanel et al. (5) found an increase in phospholipase A activity of *Candida albicans* strains isolated from the intestines of patients with psoriasis. Treatment with methotrexate made mouse intestine more vulnerable to candidal adherence (6).

Duvic et al. (7) reported the appearance of a psoriasis-like picture on the palms and soles in 6 and 20 patients who were being treated with intravenous glucan (an aqueous extract of yeast cell wall) in an attempt to stimulate their reticulo-endothelial system.

Patients with dental plates were advised to purchase an ultrasonic cleaning device for their dentures (Tatung Corp of America, Marietta, Ga). The use of such a device has been shown to reduce the numbers of recoverable yeasts from dental plates (8).

**CONCLUSION**

Psoriasis of the palms and soles is frequently associated with oropharyngeal candidal carriage.

Management of these patients can be successfully achieved with the use of oral antifungal drugs and attention to candidal carriage on their dentures.

**ACKNOWLEDGEMENT**

We wish to thank Mrs. Sheila Short for secretarial assistance in preparation of this manuscript.

**REFERENCES**

The Possible Relationship of Yeast Infections to Autism

Here are excerpts from a letter from William Shaw, Ph.D., received by Bernard Rimland, Ph.D., Autism Research Institute, 4182 Adams Ave., San Diego, CA 92116.

"I have been involved in research on autism for about a year but have been involved in metabolic screening for rare and difficult to resolve diseases for 23 years. Our studies on autism began with finding unique abnormalities in the urine of two brothers with autism and have now been extended to about 50 patients with autism.

"We have a formal research study in progress that is evaluating the efficacy of antifungal drug therapy using the urine organic acid test to guide therapy. The research project is being supported by grants from Pfizer Pharmaceuticals and Children's Mercy Hospital. Our results are only preliminary at this point but appear favorable.

"We have seen some dramatic clinical improvements . . .

"Based on our data so far, it appears that yeast/fungal infection may be responsible for some if not all cases of autism [emphasis added]. However, the ultimate genetic defect in the disease is probably in the immune system. Presumably the defective immune system allows proliferation of the yeast. Combining antifungal drug therapy with immunotherapy appears to be the most promising future approach . . . "

Here is a summary of the studies by Shaw and his associates which I included in The Yeast Connection and the Woman.

**Autism, Exciting New Findings** An informal conference on autism was held in Dallas, Texas, in late January 1995. Participants included clinicians and researchers from major medical centers.

Several speakers reported the favorable response of many autistic children to a treatment program which featured dietary changes, nutritional supplements (especially vitamin B₆ and magnesium) and antifungal medications.

One conference participant from a major teaching hospital presented clinical and laboratory studies which showed autism many be yeast related. Here's a brief summary of his observations. **ungal metabolites were found in the urine of all of the autistic children who were studied.** Over 75 of these children gave a history of frequent infections which had been treated with antibiotics.

Following treatment with oral antifungal medications (nystatin, Nizoral, or Diflucan) for seven days, laboratory findings returned to normal and the children showed significant improvement.
In conversations with me in June 1995 Shaw told me that he had found similar metabolic abnormalities in seven hyperactive children and in two adults with Alzheimer's. He presented his findings at the annual meeting of the Autism Society of America in Greensboro, North Carolina on July 15, 1995* and a scientific report was accepted for publication in the August 1995 issue of *The Journal of Clinical Chemistry*.

**Concluding Comments**

*Clinicians with impeccable personal and academic credentials have found that oral antifungal medication plays an important role in helping people with asthma, psoriasis, multiple sclerosis, autism, chronic fatigue syndrome, depression, vulvodynia (burning vulva), interstitial cystitis, endometriosis, Crohn's disease and other chronic health disorders.*

A "workshop/think tank" is being planned at a major medical center to discuss further the relationship of superficial yeast infections to chronic illness and the type of laboratory studies which may be used to provide confirmation.

* Shaw W, Chaves E, Luxem M, Abnormal Urine Organic Acids Associated with Fungal Metabolism in Urine Samples of Children with Autism: Preliminary Results of a Clinical Trial with Antifungal Drugs. (Copies of this 5-page paper are available from IHF, P. O. Box 3494, Jackson, TN 38303. Please send a business sized SASE (2 Stamps).)