The Role of Infections in Mental Illness

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"*I'm going to give my psychoanalyst one more year then I'm going to Lourdes.*" Woody Allen

Psychological treatment of chronic "mental illnesses" is often lengthy and of limited efficacy. Carolyn Raser was a healthy, energetic and upbeat psychologist who delighted in world travel and adventure. Yet after a trip last year to Bhutan she returned to her home in California with severe depression, exhaustion and joints so swollen she could not open her hotel room door. Her third physician finally diagnosed her with Rheumatoid Arthritis and put her on multiple drugs, but the depression, lethargy and exhaustion persisted, even after nearly 100 subsequent treatments from Acupuncturists, Chiropractors and rehabilitation specialists. She had spent a small fortune and was feeling quite desperate and discouraged when she heard about a researcher at the Research Institute for Infectious Mental Illness and decided to give him a call. After interviewing her, the researcher suggested a workup for parasites and digestive disorders which revealed the previously undetected presence of three protozoan parasites and a compromised secretory IGA system. Three weeks later, after following his suggestions for eliminating the infections, her depression and chronic exhaustion were gone and her energy and zest for life had returned, just in time to help her daughter with the delivery of her new baby.

In considering an infectious etiology to any chronic mental illness there are at least four categories to consider. First are those infections already recognized to induce psychiatric symptoms. These include pneumonia, urinary tract infection, sepsis, malaria, Legionnaire's disease, syphilis, typhoid, diphtheria, HIV, rheumatic fever and herpes. (Ref: Chuang)

While the psychiatric effects of these infections are known to the medical field, they are rarely screened for if the initial presentation is made to a mental health professional. Moreover, the significance of some of these infections may date back to prenatal development. Research done at the Johns Hopkins Children's Center and published in the Archives of General Psychiatry in 2001 found that mothers with evidence of Herpes Simplex Type 2 infection at the time of pregnancy had children almost six times more likely to later develop schizophrenia. And in the US, Europe and Japan, birth clusters of individuals who develop schizophrenia later in life closely mirror the seasonal distribution of Ixodes ticks at the time of conception (Lyme disease).

Second are those parasitic infections such as neurocysticercosis where the brain is directly invaded by the infective agent through a well-established, imageable (visible on brain scan) mechanism (cysts, lesions, cerebral swelling etc.) Signs of psychiatric disease (depression and psychosis) were found in over 65% of neurocysticercosis cases (caused by a tapeworm whose incidence in the US is rising due to demographic increases in foreign immigrant populations.) [Ref: Forlenza]

While the mechanisms for psychiatric manifestations are easy to demonstrate when brain tissue is directly affected, there are also multiple documented reports in the literature of psychiatric symptoms associated with other parasites like giardiasis, ascaris (roundworm), trichinae (cause of trichinosis), and Lyme borrelia and viruses like borna virus. Documentation also exists of these psychiatric symptoms resolving when the underlying hidden infection is treated.

Dr. J. Packman of Yale University wrote over ten years ago that "Patients with parasitic loads are more likely to exhibit mental status changes and there is an improvement in mental status of a subset of psychiatric patients following treatment for parasites." In fact, a review of 1300 human cases of trichinosis in Germany found CNS (central nervous system) involvement in up to 24% of the cases (Menningeal inflammation or encephalitis). [Ref: Froscher]

Clinically, in cases like neurocysticercosis, the problem is not the lack of a well-defined mechanism but the lack of mental health practitioners qualified to make such a diagnosis or even suspect it. Even infectious disease specialists tend to underestimate the scope of the problem, in part due to underreporting (neurocysticercosis is not a reportable condition in most states and the incidence of trichinosis is,

we believe, vastly underestimated according to newly developed antibody assays only made available in 2003).

Next are those parasitic, bacterial and viral infections like toxoplasmosis and strep where a strong statistical link to mental illness has been demonstrated but research is underway to establish a causal connection. In humans acute infection with toxoplasmosis gondii can cause brain lesions, changes in personality and symptoms of psychosis including delusions and auditory hallucinations.

Researchers at Rockefeller University and NIMH have suggested that after streptococcal infection some children may be at increased risk for Obsessive Compulsive Disorder. Toxoplasma gondii can alter behavior and neurotransmitter function. Since 1953, eighteen out of nineteen studies of T. gondii antibodies in persons with schizophrenia and other severe psychiatric disorders have reported a higher percentage of T. gondii antibodies in the affected persons. For example, in one large study toxoplasmosis infection was twice as common in mentally handicapped patients as in healthy controls and in a recent German study of "individuals with first episode schizophrenia compared to matched controls, 42% of the former compared to just 11% of the latter had antibodies to toxoplasma."

Two other studies found that exposure to cats (the primary carrier for toxoplasmosis transmission) in childhood is a risk factor for the development of schizophrenia. Furthermore, certain antipsychotic and mood-stabilizer drugs such as Halperidol and Valproic acid inhibited this parasite in vitro at a concentration below that found in the cerebrospinal fluid and blood of individuals being treated with this medication, suggesting that some medications used to treat schizophrenia and bipolar disorder may actually work by inhibiting the replication of toxoplasmosis gondii. (Ref: Jones-Brando, Torrey, Yolken)

Other studies have shown that antipsychotic drugs like Thorazine, Haldol and Clozapine inhibit viral replication and that the cerebrospinal fluid of patients with recent-onset schizophrenia shows a significant increase in reverse transcriptase (an enzyme) activity - which is an important component of infectious retroviruses (a type of virus). Furthermore, when the CSF (cerebral spinal fluid) from these patients was used to inoculate a New World monkey cell line there was a tenfold increase in reverse transcriptase activity which suggests the presence of a replicating virus. Malhotra has demonstrated the absence of CCR5-32 homozygotes (specific matching genetic codes) in

over 200 schizophrenic patients - which dramatically increases susceptibility to retroviral infection. (Ref: F. Yee)

It is research like this that has led Johns Hopkins virologist Robert Yolken and psychiatry professor and former special assistant to the Director of the National Institute for Mental Health Dr. E. Fuller Torrey to believe that toxoplasmosis is one of several infectious agents that causes most cases of schizophrenia and bipolar disorder. The idea is not new. In fact, as far back as 1922 the famous psychiatrist Karl Menninger hypothesized that schizophrenia was "in most instances the byproduct of viral encephalitis."

Torrey notes that in the late nineteenth century schizophrenia and bipolar disorder went from being rare diseases to relatively common ones at the same time that cat ownership became popular. And Yolken designed a retrospective study of twenty-five hundred families showing that mothers of children who later developed psychoses were 4.5 times more likely to have antibodies to toxoplasmosis than the mothers of healthy controls. Due to the frequency of cat ownership, a large percentage of the US population (up to 50%) has been exposed to toxoplasmosis but most immunocompetent carriers remain asymptomatic until another immunological burden such as HIV or a separate parasite weakens the host defenses and precipitates pathogenic expression. That is what makes interpretation of the chronic state so tricky, and at the Research Institute for Infectious Mental Illness we make sure to try to identify any parasitic coinfections before deciding on an appropriate course of treatment.

Finally, while toxoplasmosis gets a lot of attention due to Torrey's and Yolken's pioneering studies and the known mechanism of brain lesions, there are many other infective agents that may not target the brain specifically but can severely affect mental function through the cumulative downstream consequences of chronic infection. While the importance of this link in the etiopathogenesis of mental illness is rarely recognized, these focal and systemic infections are very common and their psychiatric effects often severe. (Parasites are the most common causes of mortality and morbidity in the world.)

In this nonspecific category are scores of parasites, protozoa, helminths [intestinal parasites,] bacteria, fungi and viruses which, if not directly invading and disabling brain tissue and neurotransmitter function, do so indirectly by depleting the host of essential nutrients, interfering with enzyme functions, and releasing a massive load of waste products - enteric poisons and toxins which disrupt brain

metabolism. (A single mature adult tapeworm can lay a million eggs a day and roundworms, which infect about twenty-five per cent of the world's population, lay 200,000 daily).

Remember, the brain is your body's most energy-intensive organ. It represents only three percent of your body weight but utilizes twenty-five percent of your body's oxygen, nutrients and circulating glucose. Therefore any significant metabolic disruptions can impact brain function first. This link is borne out statistically.

Mental patients have much higher rates of parasitic infection than the general population. Between 1995 and 1996 researchers at the University of Ancona did stool tests on 238 residents of four Italian psychiatric institutions and found parasites in 53.8 percent of the residents including all of those residents with behavioral aberrations (Ref: Giacometti). In our experience parasites are often implicated in cognitive dysfunction and chronic emotional stress disorders and, to the untrained eye, classic symptoms like apathy, exhaustion, confusion, appetite and memory loss, "nervous stomach," social withdrawal, lethargy and loss of sex drive and motivation are frequently assumed to signal a depressive disorder without an adequate differential diagnosis being made or even attempted. Adding to the confusion, classic indicators of acute infection such as fever or elevated antibodies often reverse themselves in chronic cases due to secondary hypothyroidism and immunodepression. Unfortunately, until Western psychiatry further recognizes that the mind/body connection goes in both directions patients will continue to suffer from a de facto lack of differential diagnostic criteria in clinically identical syndromes.

Even for those clinicians who recognize the devastating psychological effects that chronic intestinal, focal and even dental infections can have on normal brain function, accurate diagnosis presents formidable challenges. In fact some standard parasite stool test procedures identify less than ten percent of active infections and even the "politically correct" holistic specialty labs miss many infections that are nondetectable in fecal specimens, have inconsistent shedding patterns, are extra intestinal or otherwise hard to identify. For example, according to the World Health Organization, over two billion people are infected with worms, yet rarely will they show up in stool assays.

(These numbers are not surprising once you realize that the exposure vectors are potentially everything you eat, drink, breathe and touch. If you think you have to leave the country to be exposed to exotic

parasites, think again. In fact, try walking into the kitchen of your favorite restaurant and see if the cook speaks English.)

At the Research Institute for Infectious Mental Illness we use multiple labs with complementary strengths and a combination of advanced scientific diagnostic procedures including O & P microscopy, multifluid antigen and antibody detection, stool cultures, enzyme immunoassay, mucosal markers, inflammation assays, imaging techniques and other indirect laboratory indicators combined with extensive historical and clinical evaluations to identify chronic infectious stressors. (Patients previously diagnosed with "Chronic Candidiasis" often find that Candida was merely a cofactor or consequence of more significant infections and infestations which created obstacles to long-term cure.)

"Mental" symptoms often improve dramatically when hidden neuroimmune infections are treated successfully and normal brain metabolism resumes, especially in "sudden-onset" syndromes. After identifying and treating the primary infections we focus on rebuilding the host's immunological defenses and mucosal integrity to prevent relapse. Premature nutritional supplementation, even in frank anemia, can be counterproductive since some vitamins and minerals (e.g., iron) can be growth factors for microorganisms which the body intentionally downregulates the uptake of during active infection. But individually formulated subsequent nutritional supplementation is usually essential for full recovery. We also screen patients for heavy metals, environmental chemicals, molds and electromagnetic stressors, "Brain allergies," food sensitivities, hormone disorders, diet and numerous other variables which can influence cognitive and affective function. To speed recovery, our evidence-based Integral Medicine approach may include appropriate treatments from consulting nutritionists, homeopaths, acupuncturists, herbalists and bodyworkers.

The erosion or loss of brain function is arguably the most frightening and disabling experience a person can have. Almost by definition, standard psychological or psychiatric intervention postulates a dichotomy between disorders of the body and those of the mind and has a long way to go in recognizing the importance of infectious etiologies in mental health care. The Research Institute for Infectious Mental Illness provides testing, clinical and consulting services to clients from all over the world and educates professionals in this critical area. Long distance phone consultations are also available.