

Infectious Diseases and Mental Illness: Is There a Link?

To the Editor: The report by Hatalski et al. (1) on Borna virus as a probable human pathogen provides yet another example of an infectious agent being tentatively associated with neuropsychiatric disorders. Earlier this year, researchers at Rockefeller University and the National Institute of Mental Health suggested that after streptococcal infection, some children may be at increased risk for obsessive-compulsive disorders and Tourette syndrome (2). The human B-cell antigen D8/17, believed to be a marker for increased susceptibility to poststreptococcal rheumatic heart disease, has been tentatively linked to this increased risk for psychiatric illness in children. Other reports of patients with complicated Lyme borreliosis, including some whose infections have progressed to encephalopathies, describe persistent verbal and memory deficits among these patients (3). In a few Lyme disease patients, the only overt symptoms of disease at the time of initial diagnosis and treatment were classified as mental confusion (4). Two newly emergent infectious diseases in the United States, leptospirosis and neurocysticercosis, have been found among inner city residents and poor immigrants, respectively. Occasionally leptospirosis has been associated with a variety of postinfectious psychiatric symptoms, including depression, dementia, and psychosis (5). Neurocysticercosis, a tropical parasitic infection, is increasingly associated with emergency room admissions for seizures and epilepsy (6). Still other infectious diseases are being examined for links with cognitive symptoms and emotional disorders.

The primary cause of many common psychiatric disorders, including depression, manic depression, anxiety, and schizophrenia, remains a mystery. The World Health Organization estimates that 1.5 billion people worldwide suffer from a neuropsychiatric disorder. Of the 10 leading causes of disability in 1990, four were psychiatric disorders: unipolar depression, manic depression, schizophrenia, and obsessive-compulsive disorders (7). The National Institute of Mental Health recently estimated that as many as 20% of young Americans ages 7 to 14—approximately 10 million children—have mental health problems severe enough to compromise their ability to function (8). Infectious agents may

play a role in some of these diseases to some unknown degree. A better understanding of the role of infection may speed treatment and prevention efforts and reduce the degree of disability and stigma associated with mental illness.

Vaccines and antimicrobial agents might enhance current therapeutic options for mental illnesses. Even if infectious diseases were a primary factor in only 1% of neuropsychiatric illnesses, some 10 million persons might benefit from antimicrobial therapies. Identifying those susceptible to neuropsychiatric illnesses (because of environmental factors or genetic predisposition) may also permit vaccination or antimicrobial prophylaxis and a subsequent lowering of disease incidence.

Physicians and federal agencies addressing the problems of emerging infectious diseases should examine the possibility of infection as a cause of mental illness. Better communication among infectious disease and mental health experts, as well as additional training, will be needed to shed light on the growing phenomenon of infectious diseases manifesting themselves as neuropsychiatric disorders.

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***Mycobacterium nonchromogenicum* Bacteremia in an AIDS Patient**

To the Editor: *Mycobacterium avium* complex is the most common nontuberculous mycobacterium that causes disseminated infection in HIV-positive patients (1). Other less common nontuberculous mycobacteria responsible for disseminated disease in these patients are *M. fortuitum* (2), *M. genavense* (3), *M. goodii* (4), *M. haemophilum* (5), *M. kansasii* (6), *M. malmoense* (7), *M. marinum* (8), *M. scrofulaceum* (9), *M. simiae* (10), *M. szulgai* (11), *M. terrae* (9), and *M. xenopi* (2,9). Although only *M. genavense*, *M. kansasii*, and *M. xenopi* are significantly more frequent in these patients (2,3,9), HIV infection is likely a predisposing condition for all nontuberculous mycobacterial infections. We report the first case of disseminated infection caused by *M. nonchromogenicum* in an HIV-infected patient.

A 28-year-old man with HIV infection acquired by sharing injection tools was seen in our outpatient clinic because of intermittent fever, drenching nocturnal sweats, and cough with purulent sputum of 4 months' duration. He also reported a weight loss of 10 kg in the previous 2 months. He had been diagnosed with bronchial infection in another hospital and had been treated with an unknown antibiotic. After this treatment, respiratory symptoms had improved somewhat, but fever and constitutional symptoms continued. His only previous opportunistic infection had been recurrent oral and esophageal candidiasis. The last CD4-cell count had been 16/ μ L 1 year earlier, and he was receiving didanosine and prophylactic therapy with cotrimoxazole and fluconazole. On physical examination the patient appeared ill; he was febrile, cachectic, and had thrush and oral hairy leukoplakia. Neither lymphadenopathy nor abnormal cardiopulmonary symptoms were found. The liver, which had enlarged since the last examination, was palpated 6 cm below the right costal margin. Abnormal laboratory values included aspartate aminotransferase 61 U/L, gamma-glutamyl transferase 209 U/L, lactate

dehydrogenase 516 U/L, hemoglobin 12.3 g/dL, leukocyte count 4,300/ μ L (66% neutrophils, 19% band forms, 1% metamyelocytes, 3% lymphocytes, 11% monocytes), platelet count 130,000/ μ L, and erythrocyte sedimentation rate 72 mm/h. Chest X-rays were unremarkable, and a set of blood cultures was sterile. A sputum culture yielded *Haemophilus influenzae* sensitive to ampicillin, and smears and cultures for mycobacteria in one stool and three sputum samples were negative.

The patient was treated with oral amoxicillin for 2 weeks without improvement. Empirical therapy against *M. avium* complex with clarithromycin, ciprofloxacin, and ethambutol was started; the patient's condition improved dramatically within the next few days, and the fever and diaphoresis disappeared, although cough and sputum production remained unchanged. Three weeks later, a slow-growing nonphotochromogenic mycobacterium, identified as *M. nonchromogenicum* in a reference laboratory (Centro Nacional de Microbiología, Majadahonda, Madrid, Spain) by biochemical tests and confirmed by polymerase chain reaction-restriction enzyme pattern analysis, was isolated from a blood sample obtained on admission. This microorganism was sensitive to the three drugs administered, and the treatment was continued. Two months later the patient had gained 10 kg, hemoglobin had increased to 13.8 g/dL, the erythrocyte sedimentation rate had decreased to 52 mm/h, and the differential leukocyte count had returned to normal. Antimycobacterial drugs were withheld after 1 year of treatment. Twenty-two months after the diagnosis, the patient is doing well. He is receiving combination antiretroviral therapy, and his CD4-cell count is 128/ μ L.

M. nonchromogenicum, a slow-growing nonpigmented (Runyon's group III) mycobacterium, belongs to the *M. terrae* complex, together with *M. triviale*; it is traditionally considered nonpathogenic. However, it has been involved in a few cases of pulmonary infection (12) and chronic tenosynovitis secondary to puncture wounds (13), like the related organism *M. terrae*. In fact, some authors think that *M. nonchromogenicum* is the true pathogen in the *M. terrae* complex (13), and it is possible that some reports have misidentified this organism. This complex was first isolated in soil washings