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Toxicant exposure and mental health: opportunities for treatment?

By James Black

Understanding a patient's exposure to environmental toxicants can help identify the causes of a mental illness and could help avoid a medicinal course of treatment, a growing trend in psychiatric research is suggesting.

In a paper published earlier this year, Stephen Genuis, clinical associate professor of medicine at the University of Alberta in Canada, recommends exposure assessments be integrated into standard methods of diagnosis. [J Forensic Sci 54(2), Genuis]

"Although symptoms related to brain dysfunction may present as emotional or behavioural in nature," says Genuis, "the aetiology of some mental health afflictions is pathophysiological rather than pathopsychological."

There have been a number of studies linking environmental toxicants with mental disorders. One survey of hundreds of farmers in Colorado, USA, found those exposed to pesticides to be six times more likely to report themselves as having depression. [Ann Epidemiol 12(6), Stallones et al.]

Similarly, in the early nineties the organophosphate Methyl Parathion was illegally sprayed in 1500 US homes. More than half of those who took part in a study of the incident reported serious depressive symptoms. [Health Soc Work 25(1), Rehner et al.]

Organophosphates have also been linked to suicidal thoughts. A study of rural communities in China suggests that low-level exposure to these pesticides can have adverse effects on mental health. [Bull World Health Organ, 87(10), Zhang et al.]

In his recent paper, Genuis also describes the experiences of a young primary school teacher who suffered depression, insomnia and disturbed thoughts. After a number of therapies and medicines were prescribed with little or no effect, a screening of his red blood cells found abnormally high traces of mercury.

The patient explained that around 24 months prior, about the same time the symptoms started,

It is worth asking people with mood disorders about their possible exposure to environmental contaminants



Could understanding environmental exposures help diagnose and treat some cases of depression?

he had started to increase his intake of canned tuna, because of the food's levels of omega-3 fatty acids. Tuna often contains high levels of mercury and eight months after removing the tuna from his diet, the patient's symptoms subsided.

Similar case studies by Genuis include a hairdresser who experienced serious bouts of depression despite having no personal or family history of psychiatric conditions. Once again, standard treatment was exhausted before a change in occupation resulted in the eventual disappearance of the symptoms. [J Am Board Fam Pract 17, Genuis]

In each of these studies, Genuis concludes that exposure to chemicals should be incorporated into standard primary care assessments of mentally ill patients.

He says: "Health professionals and other officials should consider toxicant exposure and adverse chemical accumulation as a potential determinant when individuals present with inexplicable mental health problems or disordered behaviour."

Robert Stewart, co-author of the Chinese study, agrees: "I think first of all we can say that there needs to be greater regulation of these chemicals on a global level.

"Studies like this are not conclusive but if clinicians work in areas where these industries and agricultural practices are common, it would be worth them asking further questions of people with mood disorders and/or suicidal thoughts about their possible exposure."

AMERICAN CANCER SOCIETY PLANS TO EXAMINE ENVIRONMENTAL FACTORS BEHIND DISEASE

For the first time, the American Cancer Society (ACS) has issued a statement about how it is seeking to better understand the relationship between environmental contaminants and cancer.

The statement was written by the ACS' recently-established scientific advisory subcommittee on the environment and cancer, in response to growing public concern about how the environment might be affecting cancer incidence.

Although the ACS claims a long history in dealing with environmental causes of cancer, it has always defined "environmental causes" as acquired cancers, not ones with a purely genetic aetiology.

This definition of "environmental" may be confusing to some because it captures physical inactivity and smoking as well as what the ACS says "some members of the public" associate more commonly with exposure to predominantly man-made toxic pollutants encountered in everyday life.

To assuage public concerns, the ACS is therefore beginning to put more resources into understanding what issues such as windows of development, endocrine disruption and other areas of growing interest might mean for cancer prevention.

The ACS is one of few major cancer organisations to have established a body to address these environmental health issues. For example, a source at Cancer Research UK said understanding the role of environmental contaminants in causing cancer was "not their business" and they leave developing an understanding of this area to other organisations.

Doctors tested for exposure to hazardous chemicals common in healthcare

A recent biomonitoring survey of US medical professionals has found that all 20 participants had toxic chemicals associated with health care in their bodies.

The survey, by Physicians for Social Responsibility, found that each participant had at least 24 individual chemicals present, all associated with chronic illness and physical disorders.

Through their jobs, medical professionals have many opportunities for exposure to chemicals, in both direct forms and the metabolites formed when they break down in the body.

The survey was the first attempt to find out if these chemicals are actually getting into the bodies of doctors and nurses.

Researchers investigated this with biomonitoring, a technique in which blood, urine, hair, semen, breast milk or other biologic specimens are analyzed for the presence of chemicals.

Although the survey authors admit they are unable to offer more than a preliminary indicator of healthcare professionals' exposure, survey participants nonetheless felt it was important to be tested.

Dr. Sean Palfrey, professor of pediatrics and public health at Boston University School of Medicine, said: "If we as physicians are to understand our patients' health problems - from cancer to neurological harm to reproductive dysfunctions - we need to take a look at chemical exposure in our bodies."

RECENT NEWS AND SCIENCE ABOUT THE ENVIRONMENT AND HEALTH

Perinatal exposure to bisphenol-A makes rats fat: New study finding that pregnant and lactating rats fed on a diet containing low amounts of BPA had pups with more fat tissue. <http://tinyurl.com/fatrats>

Tweens challenged by grown-up malady: A story about two girls with breast cancer, aged 11 and 13, and the mystery of decrease in age of onset of the disease. <http://tinyurl.com/tweenscancer>

A place where cancer is the norm: A brilliant NYT article on the immense challenge and human cost of treating cancer - and a powerful, implicit argument for prevention. <http://tinyurl.com/treatingcancer>

2-year-olds' exposures to chemicals: A new survey of how much of which chemicals 2-year-olds are exposed to, with high exposures to endocrine disruptors especially from cosmetics, food and dust. <http://tinyurl.com/tyoexposure>

SIN List v1.1: A longer, revised version of a list (of now 356) chemicals which should be regulated in addition to the very few which already fall under the REACH chemicals laws. <http://tinyurl.com/sinlist11>

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