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Mood disorders in children

Depression, anxiety, schizophrenia and bipolar disorder are umbrella labels for a complex set of conditions. In biological terms they are the result of a number of systems not functioning as they should. If tests are able to identify these imbalances, they can potentially be treated.



Mood or bio-psychiatric disorders carry significant risk for children – and a huge responsibility for the practitioners working with them. They are a complex set of conditions, the symptoms of which are very different in children and teenagers from those in adults. Yet biologically they are the result of dysfunction across a number of systems, and while they are viewed as mood disorders, that is only the tip of the iceberg. There is often a tendency to try and over-simplify complicated diagnoses and thereby reduce the significance of the factors underlying the problem.

WHAT IS BIOLOGICAL PSYCHIATRY?

Biological psychiatrists believe that 'mood' disorders should be understood in terms of the biological function of the nervous system, which is affected by imbalances in biochemistry, physiology and genetic variability. For integrative practitioners, this means that these disorders can respond to appropriate biomedical treatment, specifically nutrient therapy.

It is important for parents of children who have been diagnosed with a mood disorder to familiarise themselves with the terms that relate to the underlying

biological imbalances. This is because the brain does not exist in isolation. In order to de-stigmatise umbrella labels like depression, schizophrenia, anxiety and bipolar disorder, we must educate ourselves to understand the following: pathways similar to those that result in cardiovascular disorders, stroke, cancer and osteoporosis may also be responsible for bio-psychiatric disorders.

INCIDENCE

A 2002 Harvard study found a 23% increase in the rate of depression among children.¹ Another study of a randomly selected sample of high-school students showed that 22.3% of females and 11.4% of males reported a current or previous episode of depression.² These are astounding statistics, but what is of further concern is that children and teenagers do not outgrow mood disorders. They grow up into adults with mood disorders, with each episode potentially being more severe and debilitating than the one before. A study of 10-year-old children who had been treated for major depressive disorder found that 33.3% of them had developed bipolar disorder by the age of 20.

THE SSRI DEBATE IN CHILD PSYCHIATRY

The most commonly prescribed treatment for depression and anxiety in children is a class of drugs known as SSRIs (selective serotonin re-uptake inhibitors). The theory is that SSRIs ease these disorders by affecting the chemical messengers or neurotransmitters that communicate between brain cells. Most antidepressants work by changing levels of one or more of these naturally occurring chemicals, and SSRIs in particular block re-uptake of serotonin (our 'feel good' neurotransmitter). By blocking this re-uptake, SSRIs are thought to boost mood.



In April 2003,³ the UK Committee on the Safety of Medicines set up an expert working group to consider the safety of SSRIs and in December 2003 declared that the expert group . . . 'has now studied all available evidence and found that the risks of treating depressive illness in under 18s with certain SSRIs outweigh the benefits of treatment.'

Also quoted was the chair of the UK Medicines and Healthcare Regulatory Agency (MHRA), who said that 'The majority of SSRIs . . . – the most commonly prescribed type of antidepressants – are not suitable to be used by

If these are treated, a child suffering from a mood disorder may have a chance of growing up into adult who doesn't have one.

THE UNDERLYING PATHWAYS

Stress (environmental and physiological) as well as genetic susceptibility leads to depressive symptoms, which are shaped by inflammatory processes in the brain. The current theory of the pathways underlying depression and the other bio-psychiatric disorders indicates that a number of systems go awry – the gastro-intestinal system (gut flora), the immune system (inflammation),

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under 18s.' The MHRA advice was intended as a strong signal, while falling short of an outright ban; however, it has been treated as an effective ban by many practitioners in the UK, and widely interpreted as such in the media.

Worldwide there is still a question mark over these findings, especially because many mood disorders carry a significant risk of suicide if they remain untreated.

Early intervention is key. While it would be irresponsible to suggest that a child with a diagnosed mood disorder should remain untreated, perhaps a better approach would be to pose some serious questions about the medication approach in the long term. Now that we are finding out the biological bases for these conditions, proper tests should be able to identify the imbalances that cause them.

mitochondrial dysfunction (coupled with oxidative stress), and impaired methylation.

What do these terms mean for a parent or a patient, and what tests are available?

The gut and the brain

A complete nervous system consisting of some 100 million nerve cells lines the long tube of our gastro-intestinal tract. In connection with the brain in our skull, the 'second brain' in our gut partly determines our mental state and plays key roles in certain diseases.

Hippocrates said it: all diseases begin in the gut. Proper gastro-intestinal functioning ensures elimination of toxic molecules, microbes and undigested food particles from the body to prevent infections, toxic reactions, allergies and other health problems.

Colic, bloating, flatulence, diarrhoea, constipation, feeding difficulties and malnourishment are to various degrees all typical symptoms of mood disorders in children. Playing a central part here are the gut flora. The large colonies of these microbes in our digestive system fulfil vital functions.

Chronic use of antibiotics in children as well as environmental insults allows 'bad' microbes and yeasts to proliferate in the gut. Their negative role in gastro-intestinal disorders is widely accepted, but research also shows a relationship between the gastro-intestinal system and other systems in the body, such as the neurological, detoxification and immune systems.

The immune system is completely dependent on a healthy gut. The microbes that inhabit the surface of the digestive system can truly be described as the cradle of the immune system. Research shows that when the gut flora is damaged, the whole immune system is pushed out of balance. Neurological function is also affected.

Excessive yeast, for example, produces toxic metabolites that can pass through the blood-brain barrier and cause 'brain fog', behaviour problems and learning difficulties. Byproducts of excessive bacteria can interfere with neurotransmitters and cause chronic fatigue. *Clostridia* species may be associated with neuropsychiatric effects.

Testing available for microbial imbalances: Comprehensive Digestive Stool Analysis.

Inflammation

New evidence suggests that chronic, mild inflammatory processes are involved in major bio-psychiatric disorders. Two pro-inflammatory molecules in the nervous system called IL-6 and TNF-alpha are often increased

in both children and adults who suffer from depression.

Inflammation impacts on the way neurotransmitters communicate with each other. For example, more serotonin is needed to balance the neuronal miscommunication, so there is less left to balance mood. In addition, some of the resulting waste products have neurotoxic effects. These include reductions in two other neurotransmitters, GABA and dopamine, which are known to have calming effects – when there is less of them, anxiety may increase. Antidepressants may balance these neurotransmitters and thereby elevate mood, but they don't treat the underlying inflammation that started the process in the first place.

Testing available for inflammatory markers: Genetic polymorphisms in TNF-alpha and IL-6; highly sensitive C-reactive protein (CRP).

Oxidative stress and mitochondrial dysfunction

The mitochondria are the energy factories of the cells, and their primary mission is to make the cellular equivalent of petrol, adenosine triphosphate (ATP). The muscles and nerves are the most petrol-hungry cells and if the mitochondria don't have the nutrients they need to make the petrol, they cannot work efficiently. When the mitochondria become overwhelmed because of this, the result is oxidative stress.

Oxidative stress is caused by excessive formation of chemically unstable byproducts, called free radicals, within the cell. Under normal conditions, the cell is able to destroy the free radicals. However, when excessive free radicals accumulate, they mount an attack against the cell in search of chemical stability. Oxidative stress like this damages lipids in the brain, which can cause neuronal



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cell death and reduced ability to stabilise moods.

The effects of mitochondrial dysfunction on mental processes are very similar to the symptoms of depression, including impairments in attention, behaviour and memory. Children with mitochondrial disorders are more likely to be depressed than children without, and when they become adults they are more likely to suffer from depression, chronic fatigue, major depressive disorders, bipolar disorder and panic disorder than the general population.

Testing available for mitochondrial dysfunction: organic acid urine test (OAT).

Impaired methylation

The methylation cycle is essential for mental and physical health. It is critical for the metabolism of hormones that regulate our stress response as well as the manufacture of compounds that affect depression. Methylation is also involved in the modification of heavy metals.

In the body the methylation cycle requires folate (a B vitamin) and vitamin B₁₂ to produce the amino acid methionine, which is the immediate precursor of SAM-e, a molecule produced by the body that assists in the methylation of entities with important roles in mood disorders, including neurotransmitters.

Some children have genetic abnormalities that alter their methylation cycle. One very important gene in this regard is MTHFR, abnormalities of which reduce the function of the methylation cycle resulting in imbalances of a chemical known as homocysteine. Imbalances in homocysteine are associated with

depressive disorders. The odds of having depression are 36% greater if a person has a genetic abnormality in the MTHFR gene.⁴

Testing available for methylation defects: homocysteine, genetic polymorphism in MTHFR.

BIOCHEMICAL INTERVENTION

As bio-psychiatry advances, biochemical treatments to correct brain chemistry will become better defined. While these underlying processes are complicated and affect each child differently, they do offer hope for the future – a future in which integrative medicine is likely to play an important role.

The brain is a chemical factory, which produces serotonin, dopamine, noradrenaline and other brain chemicals 24 hours a day. The only raw materials for these processes are nutrients, namely amino acids, vitamins and minerals. If the brain receives the wrong amounts of these nutrient building blocks, serious problems with our neurotransmitters may well result.

Nutrient therapy can be very potent and does not involve side-effects, since no molecules foreign to the body are needed. This therapeutic approach may eventually eliminate the need for most psychiatric medications.

Having said that, biochemical individuality must remain the focus in nutrition therapy. Integrative practitioners must be wary of making blanket recommendations for managing mood disorders. Just as psychotropic medications are not effective for every child, so it is with nutraceuticals. We must continue to tread carefully. ●