



GENERAL ACUPUNCTURE

Meshing TCM With Environmental Pediatrics: Where's the Overlap?

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Pediatrics has a long history within Chinese medicine dating back to the late Han dynasty (i.e., the late 200s CE), with the two primary areas of emphasis being herbal medicine and *xiao er tui na* (pediatric massage). In conventional medicine, however, pediatrics has a more recent history and was not established as a formal discipline in the United States until the 1860s by Abraham Jacobi at the Mount Sinai Hospital in New York City¹.

Newer still is the burgeoning field of environmental pediatrics, the academic and clinical discipline exploring how environmental exposures in early life impact health and development in childhood and across the entire human life span.

Environmental pediatrics marks the convergence of three distinct fields of study: pediatric toxicology, nutritional epidemiology, and social science research¹. Children's environmental health, as it is sometimes called, examines not only the influence of harmful environmental exposures on children's health, but also how healthy environments protect children's health, and nurture their growth and development.

As Chinese medicine practitioners, we can apply a different medical lens to pediatrics, and we are uniquely suited to detect, treat, and prevent imbalances resulting from harmful environmental factors or the lack of healthful environmental surroundings.

The Major Tenants of Environmental Pediatrics



In clinical practice, there are four major tenants of environmental pediatrics that we must first understand. Not surprisingly, there is significant overlap with TCM pediatric physiology and pathophysiology, which we'll explore below.

Children Have Proportionally Greater Exposure To Toxic Chemicals

Children display an increased risk of exposure to chemical and nutritional toxins in their environment. In part, this is due to their disproportionately large intakes of air, food and water. For example, a 6-month-old infant drinks about seven times more water per kilogram of body weight than an adult². Additionally, children have a larger surface-to-volume ratio and more permeable skin, which can lead to greater dermal absorption of toxic chemicals.

Children also behave differently than adults, with younger children engaging in frequent hand-to-mouth and object-to-mouth behavior when exploring their environment, leading to greater ingestion of toxic substances. Children also spend a disproportionate amount of time on the floor, increasing their exposure to household pesticides and solvent vapors.

Zhong Yi Er Ke Xue (A Study of Chinese Medicine Pediatrics) states: "Children's exterior defensive

is not secure. Therefore, external evils easily enter the exterior and assail the lungs ... children's transportation and transformation is not fortified and complete. Therefore, they are easily damaged by food.³

Due to the immature nature of the lung and spleen functions, children are naturally more susceptible to evils, including environmental toxins. As practitioners, we can help direct parents away from certain environments and conditions that would likely assault the lung and spleen.

Children's Metabolic Pathways Are Immature

A child's ability to metabolize and excrete toxic substances is quite different from that of an adult. In many cases, children are far more vulnerable and less able than adults to detoxify and rid themselves of harmful compounds. Therefore, many toxic chemicals have longer half-lives in children's bodies than in adults.

For example, organophosphate pesticides account for 70 percent of the pesticide use in the U.S.⁴ This class of pesticides is widely known to be detrimental to human health and in some cases may stay in a child's bloodstream for up to 36 hours following exposure, compared to only six hours in adults, causing significant cellular damage.⁵

In the *Zhu Bing Yuan Hou Lun (Treatise on the Origins and Symptoms of Various Diseases)*, Chao Yuan-fang states that "children's viscera and bowel qi is soft and weak," exemplifying the notion that the physiological constitution of children is inherently weak. As such, their ability to cleanse themselves from environmental pathogens or toxins will be inadequate when compared to their adult counterparts. Fortunately, Chinese medicine has much to offer in the way of herbs, *tui na*, *gua sha*, and dietetics that can enhance the functioning of the *zang fu* organs.

Children's Developmental Processes Are Easily Disrupted

Growth and development in embryonic, fetal and early childhood life is exceptionally rapid and tightly orchestrated. This great degree of complexity results in "windows of vulnerability" or periods of time in early development that are marked by heightened sensitivity to toxins and chemicals.⁶ In contrast, adulthood is not marked by such periods of time.

For example, consider the sensitivity of infants' lungs to second-hand smoke. The lungs continue to grow extensively during the first 12 months of life and are still forming air sacs up until the fourth year. The harmful effects of secondhand smoke are more deleterious in infants since the tissue itself is still developing and growing, and is thus acutely susceptible to environmental exposure.

It is widely known that children have a pure yang constitution. This inherently yang-centric orientation means that change, albeit beneficial or harmful, happens quickly. It's the same rationale for why young children can be gallivanting around one minute, and spiking a fever the next. It also explains why children are constantly in a state of flux, throughout which they may be particularly vulnerable.

Without the ability of sufficient yin to anchor exuberant yang, the yang becomes hyperactive and allows for the manifestation of evil heat (i.e., increased vulnerability). On the other hand, if we can help families navigate through rapid and delicate developmental milestones, we may be able to safeguard the health of their children.

Children Have More Time Than Adults To Develop Chronic Diseases That May Be Triggered By

Environmental Exposures In Early Life

Although it may seem obvious, many diseases that are triggered by environmental toxins develop through multiple stages over many years. This is based on the "fetal origins of adult disease" model⁷, where David Barker and colleagues first found that nutritional conditions within the uterine environment greatly impact the health of a person throughout their entire life span. Essentially, early exposure to negative environmental substances or toxins can be particularly influential with respect to chronic illness later in life.

A statement of fact within Chinese medicine says, "Deep lying [evils] later emit." As explained by Bob Flaws in *Statements of Fact in Traditional Chinese Medicine*,⁸ we understand that a deep-lying or hidden evil can enter the body at one time and can cause disease at a later time. This, in part, accounts for the concept of fetal toxin accumulation in TCM, where during the delicate and rapid process of intrauterine development a fetus picks up toxicity from the mother, and then those toxins become expressed later in life.

It is fairly safe to assume then that the longer an evil has to brew, the worse the potential outcome, and the greater the likelihood for a warm disease (i.e. chronic inflammatory illness) to erupt. If we can help express these hidden evils earlier and allow a child's body to rid them, we may be able to help prevent the onset of illness later in life.

At the Intersection of Old & New Medicine

The truth is that our children are not well and our environment has changed dramatically in the past 200 years. At the same time, patterns of childhood disease have become profoundly altered. Two centuries ago, the infant mortality rate ranged from 220-340 per 1,000 births, 30 percent of children died prior to their first birthday, and childhood diseases were largely infectious in nature.⁹

Today, we have experienced an "epidemiological transition,"¹⁰ with the burden of childhood illness in developed countries falling in the realm of chronic disease, such as asthma, childhood obesity, neurodevelopmental disorders (dyslexia, ADHD, Autism Spectrum Disorders), and cancers (primarily leukemia and brain cancer, which together make up the second leading cause of death in American children).¹ Although multifactorial in origin, one thing remains clear: There is strong evidence that exposures in the environment are potent causes of these diseases.¹

As holistic health care providers, we have an opportunity to both treat and prevent illness in children. With the right set of tools and a vigilant eye, we can use principles of TCM and environmental pediatrics together to turn the tide on chronic childhood illness and help families heal. By bridging the gap between old and new ways of practicing medicine, we can confront modern pediatric ailments with a fresh perspective while still honoring time-honored wisdom.

Although we've covered a lot of ground here, we've just braised the surface of what environmental pediatrics can offer Chinese medicine practitioners. In my next article, we'll cover some tell-tale signs of toxicity to look for in your pediatric patients and how to easily add environmental medicine into your acupuncture practice.

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