

SUMMARY: discusses neurodevelopmental issues in young children, sometimes associated with birth and how osteopathy can help.

Neurodevelopmental Problems – Osteopathic Perspectives

The Trauma of Birth

Some neurodevelopmental problems are associated with genetic syndromes, and some originate from known or unknown insults to the developing nervous system in utero. The vast majority, though, cannot be attributed to any traditionally diagnosable condition. It is in these cases that we must look to the role of birth injury.

A traumatic birth can have a role in neurodevelopment problems either through direct injury to the central nervous system or through insufficient oxygen at the time of birth. The infant's central nervous system is irritated by the compression of its moldable head against the hard bones of the mother's pelvis both before and during birth. In more difficult births, this impact may be severe enough to cause neurodevelopmental problems. At birth the infant loses the maternal source of oxygen and must obtain its oxygen by breathing. Poor color or a birth cry which is delayed or weak can signal too little oxygen to the brain at this critical time.

In some cases the observed neurodevelopmental problems fit a particular pattern, and we find it helpful to use a label such as cerebral palsy, autism or ADHD. For many children, though, we have to accept the limitations we see without a diagnostic label. In either case oxygen compromise and birth trauma are frequently seen factors.

Osteopathic manipulative treatment can improve the child's neurologic function by resolving the effects of the compressive forces of a traumatic birth. 'Osteopathic medicine is based on the philosophy that structure and function are dynamically interrelated. Improvement in the structural relationships of bone, membrane, muscle and tissue is necessary to foster improved physiologic function.

The Common Causative Factors

The central nervous system has two primary sources of nutrition, oxygen and blood sugar, each essential to its function. Both are carried to the brain by way of the blood in the arteries and smaller blood vessels. Appropriate levels of blood sugar are usually maintained by adequate feeding and the automatic regulation of blood sugar done by the body. Ideal oxygen levels, however, are dependent on an uncomplicated transition from life inside the uterus to life outside. Lowered oxygen levels may be reflected in low muscle tone, poor skin color or too fast a breathing rate immediately after birth. Although inadequate oxygen levels may not threaten life in the first few minutes after birth, prolonged oxygen compromise will damage central nervous system function by robbing the brain of one of its two essential nutrients at this critical time.

Structural trauma to the infant skull, which can compromise central nervous system function, may be the result of prolonged forces of labor or the effects of instrumentation such as forceps and vacuum extractors. Such instrumentation is sometimes necessary to facilitate a more rapid delivery when fetal distress is present. The forces inherent in their use, though, may take their toll in the relationship of one bone to another or in irritation and tension on the membranes which surround the brain and spinal cord. Although the neurodevelopmental consequences of these structural problems may not be seen until later in childhood, some newborn difficulties may be the first signs of a neurodevelopmentally troubled child. These may include vomiting, colic, restlessness, agitated sleep, difficulty sucking and

spastic muscles. The earlier osteopathic treatment is begun, the more likely a positive outcome, though treatment later can still be of substantial benefit.

How Does Treatment Help?

Osteopathic treatment helps the body to use its inherent abilities to heal by correcting structural disturbances. A few examples will help to demonstrate the principles involved in treatment for neurodevelopmental problems. When the compression on the baby's head distorts the foramen magnum, where the brain stem leaves the skull to become the spinal cord, the resultant pressure and irritation on the pyramidal tracts may cause spasticity of the limbs. Gentle release of these compressive forces corrects the distortion and the muscles can return to a normal tone.

The forces of labor can leave the newborn with overlapping cranial bones which irritate the meningeal membranes lying between the bones and the brain itself. Tremors, twitches and irritability often result and can be resolved when osteopathic treatment releases these membranous and bony restrictions. Seizures are commonly seen when there is an area of abnormal electrical activity on the surface of the brain. Osteopathic physicians have often found that these abnormally firing electrical centers are also sites of membrane restriction and /or cranial trauma. Addressing these sites can result in a lessening or cessation of seizure activity.

Improving the ability of oxygen to reach and nourish the central nervous system is an essential component of osteopathic treatment for neurodevelopmental problems. Several factors influence oxygen supply to the brain. The respiratory center of the brain requires the unimpeded fluctuation of cerebrospinal fluid to function well. The bony and muscular components of the rib cage must be free of restrictions to allow for deep respirations. Both arteries and veins must be unimpeded in their flow through muscles, bones and tissues. Finally, the bones and membranes surrounding the brain itself must move normally for oxygen to reach brain tissue.

Other Helpful Approaches

A child with neurodevelopmental problems often responds best to a variety of interventions. Although providing more than one approach at one time makes evaluation of the benefits of each impossible, the importance of early intervention minimizes this drawback. Depending on the nature of the neurodevelopmental problem, any of the following approaches may be useful adjunct to osteopathic treatment: Physical Therapy, Occupational Therapy, Constitutional Homeopathy, Sensory Integration, Auditory Training, Neurodevelopmental Training, Developmental Optometry, Vitamins/Minerals/Supplements. This list is not meant to be exhaustive but to include a variety of potentially use approaches.

A Doctor of Osteopathy (DO) is a fully licensed physician whose training includes, beyond the normal medical curriculum, extensive training in manual manipulation as a treatment to improve body function through addressing body structure. Although many osteopathic physicians are in family practice or providing specialty care, some have chosen to focus their practices on the hands-on approach which makes osteopathy unique. Of these, some have pursued additional training in cranial osteopathy, which is essential in the osteopathic treatment of children.

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