Clinical Integration of Osteopathic Manipulative Medicine

Pediatrics – Cerebral Palsy

Author: Meredith Loh OMSIII, Sheldon C. Yao, DO

Intro: Cerebral palsy (CP) consists of a group of non-progressive clinical syndromes characterized by motor and postural dysfunction. These syndromes are due to abnormalities of the developing brain and can result in uncoordinated, stereotypic, and limited motions. They can be classified as spastic, dyskinetic, or ataxic. The prevalence of cerebral palsy is 2-4 cases per 1000 births, with increasing risk in preterm births. The etiology of CP is multi-factorial with most cases thought to be due to prenatal factors such as prematurity, intrauterine growth restriction, intrauterine infection, antepartum hemorrhage, multiple pregnancies and placental pathologies.

Patient presentations:
- Motor delay
- Neurologic signs
- Persistence of primitive reflexes
- Abnormal postural reactions
- Intellectual disability in 50% of patients

Differential diagnosis: Cerebral palsy is a diagnosis of exclusion. It depends on a combination of findings and is rarely based on isolated findings. Other conditions that present with signs and symptoms similar to CP include:
- Neurodegenerative disease
- Metabolic dysfunctions
- Developmental/traumatic lesions of the spinal cord
- Neuromuscular disorders
- Neoplasm

Clinical pearls and diagnostic tools:
- Although the lesion in CP is static, clinical signs evolve as the nervous system matures. Definitive diagnosis requires serial examinations and is not possible until later into infancy.
- Clues to an early diagnosis include abnormal behavior, psychomotor delay, and abnormal oromotor or oculomotor patterns.
  - A typical history includes poor feeding in the neonatal period, irritability, frequent vomiting and poor sleeping habits.
• Neuroimaging is useful to identify lesions and provide information about the timing of symptom progression.  
  o MRI is the preferred method of detection of abnormalities including hypoxic-ischemic injury, periventricular leukomalacia, cortical malformations and lesions of the basal ganglia.
• Disorders of the hip, including dislocation and subluxation, are common in children with CP. The hip is initially normal but through a combination of muscular imbalance and bony deformity the dysfunctions can arise.  
  o Dysfunctions are common in the adductor and iliopsoas muscles.

**OMM Integration:** Treatment goals for CP include improving quality of life and reducing disability in patients. Psychological development, communication and education are important factors in achieving these goals. A multi-disciplinary team is required to promote independence in patients with CP. One study investigated the hypothesis that OMT would improve mobility and increase the quality of life in patients with CP. They found that treatments involving osteopathy of the cranial field and myofascial release improved motor function in children with moderate to severe spastic cerebral palsy.

**Osteopathic Structural Examination:**
• Cranial strain patterns
• Postural imbalances
• Hip dysfunctions
• Psoas hypertonicity

**Possible treatment options:**
• Osteopathy in the cranial field
• Myofascial release
• Psoas counterstrain
• FPR for hip adductors

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