

## **Effect of visceral manipulation on liver enzymes on a child with cerebral palsy.**

**Yousef Salah Salem**

Shree Guru Gobind Singh Tricentenary University, Faculty of Physiotherapy, Cairo University, Egypt.

### **Abstract**

**Background:** Children with cerebral palsy often suffer from seizures so anticonvulsants drugs is a treatment choice and others using them as a prophylaxis if there is suspicion about increasing possibility for having one and commonly those list of drugs have an impact on liver function if there is long term of them of huge doses due to mal abuse or any other cause here come the need for liver enzymes monitoring.

**Objective:** Reducing the liver enzymes for those children who suffered from abnormal ratio using an osteopathic approach.

**Methods:** The study was done on two children aiming to reduce their liver enzymes as they were on abnormal value as a cause of anti-epileptic drug we use visceral manipulation techniques especially liver technique investigation using liver enzymes as Alanine Aminotransferase (ALT) and Aspartate Aminotransferase (AST).

**Results:** We found dropping with their value to normal ratio after 15 min with the visceral manipulation techniques the approach is done for three times a week for three months.

**Keywords:** Cerebral palsy (C.P), Alanine aminotransferase (alt), Aspartate aminotransferase (ast), Antiepileptic drugs (AEDs), Liver profile, Liver enzymes.

*Accepted September 30, 2016*

### **Introduction**

Epileptic seizures associated with brain damage are generally difficult to control. About half the individuals with epilepsy and a neurodeficit can be successfully treated with AEDs in the long term [1]. The patients with CP and epilepsy treated with antiepileptic drugs, 33 (53.2%) were free of seizures the majority of them on monotherapy [2]. The hepatotoxicity induced by antiepileptic drug can lead to death or an acute liver failure which could imperatively require liver transplantation. The hepatotoxicity induced by antiepileptic drug occurs either because of production of reactive toxic metabolite/s or because of induction of immunoallergic reactions. Here came to us the idea how can we can apply a maneuver for helping those children who were under those hepatotoxic drugs whose liver profile was in abnormal ratio we searched for techniques that can improve liver function and restore its normal value even to lesser extent especially if it was hard to G.I.T of the drug or reduce the dose here it come liver manipulation techniques by barrel drench the one who started to give a look to manual therapy linked to internal organs we found lots of interesting techniques we use those for liver especially as the main organ who suffer from the side effect of those drugs. Soft tissue dynamics relate to physiological efficiency and effective homeostatic balance,

altered soft tissue mobility both reflect and contribute to poor physiological function and pathological change. Improvement of mobility and restoration or normalization of movement patterns improve the self-regulatory and self-healing functions of the body, thus promoting better function health and well-being.

Communication is vital to health and good function The body has built up some amazing methods and tissues and discovered consider that movement restrictions negatively impact on communication by their chemical, neural, mechanical or otherwise, thus affecting homeostatic balance Remove or reduce these movement barriers and the body will naturally reorient itself towards health and better functioning [3].

Osteopathy has developed into osteopathic medicine, now encompassing the appropriate use of pharmaceuticals, Diagnostic studies and tests, as well as surgical procedures when indicated. Osteopathic medical practitioners follow accepted methods of physical diagnosis and surgical diagnosis and treatment, including additional training in the evaluation and treatment of the neuro musculoskeletal system, and they seek to achieve normal body mechanics [2]. Today, osteopathic medicine still has its roots deeply seeded in four general principles [4]:

1. The body is a unit; the person a unit of body, mind and spirit
2. The body is capable of self-regulation, self-healing and health maintenance
3. Structure and function are reciprocally interrelated
4. Rational treatment is based on an understanding of the above three principles

Visceral manipulation is different from many of the reflex systems that attempt to affect organs. The practitioner is not pressing on a distant reflex point, such as a neuro lymphatic, hoping to improve lymphatic drainage. The practitioner is directly working on the fascia surrounding the organ, hoping to improve mobility and the viscoelastic property [5].

### Case Representation

Two children came to us both are cerebral palsied children under anticonvulsants as a drug therapy, x was 13 years old diapelgia girl y was 10 years hypotonic children they were under drug therapy for 1 years without any liver investigation were requested by the neurologist both were pale day by day the increased in their tiredness, abnormal gut gases and a changing in urine excretions color requesting liver enzymes was some of rules we learned an increase in liver profile enzymes noticed.

### Methods for Treatment

15 min with the visceral manipulation techniques the approach is done for three times a week for three month as follow:

1. Direct Subcostal Approach to the Liver. Pushing the central part of liver post superior it should move 2 cm in the direction of the push. This manipulate hepatorenal ligament by applying the same push toward an opposite direction of the trunk bending will manipulate R and L triangular ligament and also lifting the inferior border of liver with sudden fall will manipulate the coronary ligament.
2. With the patient in the supine position. Place your right hand flat over the hepatic region, fingertips above the sternoxiphoid line, pointing toward the left triangular ligament and palm on the lateral part of R9-11 over the right lateral aspect of the liver. Your hand should follow the convexity of the rib cage it is usually easier to palpate the motion during the expiry phase In the frontal plane, during expiry, your hand should rotate from right to left in a counterclockwise motion around an anteroposterior axis that passes just distal to the third knuckle of the right.
3. Release areas where, to treat the area of the left the tension of the hepatic flexure of the colon via the right phrenicocolic ligament Then move toward the falciform and stomach triangular ligament the fingers should be pushed superiorly and laterally To work on the entire liver at once put one hand

medially and the other laterally As you move your fingers to work on different areas adjust the position of the patient to focus your left lateral decubitus position.

4. Place yourself behind the patient and put the palms of your hands on the anterolateral extremities of R7-9, with the pads of the fingers subcostal. Push the ribs anteriorly inferiorly and medially (toward the umbilicus and then in the opposite direction in slow back and forth cycle of around 10 per min with steadily increasing amplitude.
5. Emptying of the Gall Bladder Place the patient in a seated position and stand behind him with your fingers subcostal just lateral to the gall bladder, as here the abdomen is more easily depressed. Flatten your fingers well against the inferior side of the liver and be careful not to confuse the gall bladder with the first part of the duodenum or the transverse colon The superior duodenum is not sensitive to palpation whereas the gall bladder often is to force it to contract and expel the bile, push your fingers rhythmically with moderate amount of force in short 2-4 cm strokes superior, posterior and medially along the axis of gall bladder.
6. These induction techniques are performed in the supine position Your fingertips should be placed as close to the left triangular ligament as possible hand on the rib cage its ulnar aspect just extending onto the abdomen induction you work by encouraging the part of the motility cycle which is easiest and has the greatest amplitude [6,7].

### Laboratory Values

#### Liver function

Liver function was tested to assess child recovery. All lab values of an each child were surveyed by the same laboratory using the same methods. But still poor.

### Results

Improvement of the cases was done after 3 month of liver manipulation techniques after the ordinary session of physiotherapy as the liver enzymes reach their normal value after the catastrophe effect of the anticonvulsants drugs on liver enzymes

### Discussion

Basic concepts of VM are tabulated in Table 1.

There are a few basic concepts about visceral manipulation. All organs have motility and mobility. Motility is the inherent and energetic characteristic of each organ,

Child	ALT	AST	ALT	AST	
dX	75	83	60	43	<b>Pre-treatment Profile</b>
Y	88	53	48	32	<b>Post-treatment Profile</b>

Table 1. Laboratory values

independent of external influences. The mobility of an organ is the way it moves—a mechanical concept. For the most part, when assessing the viscera, each organ moves in phases towards and away from the axis of the body. Expire is the movement of an organ closer to the median axis and inspire is the movement of an organ away from it.

When performing visceral manipulation, it is often optimal to begin with the “listening technique.” This is where, in a matter of seconds, an assessment is made as to where the body is asking for attention. Once that is established, three treatment techniques are used: direct, indirect, and induction.

The direct technique consists of applying slight traction directly to an organ. The indirect technique involves using the body as a long lever to influence the mobility of an organ (thus the treatment is not direct). An example of an indirect technique would be using trunk rotation in supine to address a kidney. The first two techniques are used to address an organ’s mobility. The third technique, induction—which is also known as facilitation—addresses motility. Here one must know the precise pendulum-like motion of each organ and be able to assess the phases, i.e., inspire and expire. When the larger excursion of the two is determined, then facilitation of the lesser excursion is performed by working in its larger excursion first. It is the path of least resistance that one listens to and follow this explain the results on children [7].

Probably the only thing most people care to know about their gurgling inner organs is that they are functioning properly. But for Jean-Pierre Barral, an osteopath practicing in Grenoble, France, the body's vital viscera are like a beautifully complicated timepiece, each part in subtle but perpetual motion relative to the others. “In a single day, your internal organs move 30,000 times,” he says. “Your liver alone travels 600 m.” Problems arise, according to Barral, when a trauma or malfunction puts the mechanism out of alignment. “An organ that loses its mobility can throw the whole organism out of whack,” he says. “Our task is to help it get back on track.” To that end, Barral, 56, has spent nearly three decades developing the therapeutic technique he calls visceral manipulation. Here's how it works: using only his hands, Barral coaxes the kidneys, liver, stomach and other soft tissues back to their natural movement by applying soft pressure to the abdomen, thorax and urogenital areas. In this way, he claims to have successfully treated ailments ranging from chronic back and joint pain to indigestion, infection, incontinence, migraines and even impotence and sterility [8].

Normal physiological activity of cells and tissues requires an adequate blood supply to bring appropriate nutrition and drainage to remove waste products both the circulation and the control systems may be affected by disturbances of mechanical function effective circulation and drainage of all the body fluid systems and tissues can be done by available visceral manipulation techniques without adequate nutrition, tissues cannot perform Circulation is immensely important to health and efficiently. At a

cellular level, the dynamics of the extracellular matrix (ECM) and the microcirculation are important to function and immunity where movement of cells and fluid through Drainage is also important as without effective lymphatic and venous drainage the appropriate ‘chemical’ homeostatic balance is not maintained and waste removal is inefficient.

Liver is the largest exocrine gland with vasoelastic property and it’s under the umbrella of all visceral laws and orders [9].

This explains the results of the techniques on the liver. The liver function is determined by substrate concentrations in the blood, circulating hormonal levels, the biomatrix and the neurovegetative system.

Stimulation of the sympathetic system increases the delivery of glucose, urate and lactate. It reduces the ketogenesis, the intake of ammonia and the flow of gall. An overflow of noradrenalin in the hepatic vein will also result. Sympathetic stimulation decreases the blood flow in the liver and closes the sinusoids in the liver tissue Parasympathetic stimulation results in re opening of the sinusoids in the liver.

The actions of the sympathetic nervous system are modulated by the hormones glucagon, insulin, adrenalin, noradrenalin vasopressin and angiotensin. For the osteopath this means that during treatment of the liver attention should be given not only to the neurological relationships but also to related hormone producing organs such as the adrenal glands, the pancreas and the kidneys as well as addressing diet. Treatment of the liver only is, at best short. Local stimulation (what osteopaths probably do during visceral techniques for the liver cause increase glucose and lactate output and hemodynamic action.

## References

1. Lowenstein DH. Seizures and epilepsy. In: Fauci AS, Kasper DL, Longo DL, editors. *Harrison’s Principles of Internal Medicine*. 17th ed. New York: McGraw-Hill, Section 2: Diseases of the Central Nervous System 2008. 2498-2512.
2. Arroyo S, de la Morena A. Life-threatening adverse events of antiepileptic drugs. *Epilepsy Research* 2001; 47: 155e74.
3. Korr I (1978). *The neurobiologic mechanisms in manipulative theory*. NY: Plenum 2001.
4. Sefinger MA, King HH, Ward RC, et al. Osteopathic philosophy. In: *Foundations for Osteopathic Medicine*, 2nd ed, Ward RC, Jerome JA.
5. Barral JP, Croibier A. *Manual therapy for the peripheral nerves*. Elsevier Ltd. 2007.
6. Barral J, Mathieu J, Mercier P. *Diagnostic articulaire vertebrale*. Charleroi: SBORTM 1981.
7. Barral JP. *Visceral manipulation II*. Seattle, WA: Eastland Press 1989.

8. Curatolo P, Arpino C, Stazi MA, et al. Risk factors for the co-occurrence of partial epilepsy, cerebral palsy and mental retardation. *Dev Med Child Neurol* 1995; 37: 776-782.
9. Fryette HH. Principles of osteopathic technic. Colorado Springs: American Academy of Osteopathy 1980.

**Correspondence to:**

Yousef Salah Salem  
Department of Physiotherapy,  
Shree Guru Gobind Singh Tricentenary University,  
Ansari street, Banha, vellal, 11110 11110,  
Egypt.  
Tel: 00201229635944  
E-mail: top-german-tank@outlook.com

**Special issue:** Pediatric Research

**Editor:** Abdulla A Alharthi, Department of pediatric nephrology, Taif University, Saudi Arabia