

A case of A.D.H.D. improved by Dietary Modification and Homoeopathic Management

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In the fond memory of Dr. Kajal Senta

Abstract:

A.D.H.D. is an Attention Deficit Hyperactivity Disorder characterized by hyperactivity and impulsiveness. Though a childhood disorder; it may persist in adulthood resulting in to low self esteem, difficulty at school, work and relationships. So many therapies in present time are used to treat the A.D.H.D. child along with homoeopathy. Combination of specific diet and homoeopathy proved very efficacious in the treatment. Article presents understanding of role of Diet and homoeopathy in Neuro developmental Disorders with a case.

Keywords: Gut Brain Axis, Neuro developmental disorders, Micronutrients, Caseinogens

Abbreviations: A.D.H.D.- Attention Deficit Hyperactivity, G.B.A.- Gut Brain Axis, E.N.S.- Enteric Nervous System, N.E.- Nor Adrenalin, H.P.A.-Hypothalamo- pituitary Axis, B.B.B.- Blood Brain Barrier, SCFA- Short Chain Fatty Acid, ANS - Autonomic Nervous System

Introduction:

The life, eating patterns and life style today are much changed than 20 years back. Modernization has resulted in less physical activity, malnourishment, overeating, sleep deprivation, social isolation and less exposure to sunlight. Several studies have revealed that people generally eat according to their emotions (coffee and chocolate), that give instant pleasure from this but effect remain for short time. All these changes deteriorate physical health and mental health also. The psychological health of a person is affected by what generally misses out from his nourishment. On the other hand if we are having anxiety, apprehensions, and anger; we develop gastric symptoms like in Bryonia or Colocynth and many other remedies. Thus, there is a strong gut brain connection.

The gut-brain axis:^(1, 2)

- The gut-brain axis refers to the two-way connection and communication between the gut and the brain immune system, vagus nerve, enteric nervous system, neuro endocrine system, and circulatory system.

- Alterations in gut microbiota have been linked to the development of Autism spectrum disorders, anxiety, depressive-like behavior, impaired physical performance, and motivation, as well as neurodegenerative diseases.

Microbiota: Microbiota form Gut flora. Gut Microorganisms or gut bacteria which are living in the gut.

- Trillion of microbiota exist mainly inside the intestine and skin.
- More than 2000 species of microorganisms are present in intestine.
- GBA is not only connected physically but also connected to brain, biochemically by microbiota.
- These microbiota produce many type of chemicals that influence brain function.
- The human microbiome plays a vital role in maintaining the immune system and intestinal health.

Functions of Microbiota		
Metabolic function:	Protective function	Structural and histological function
• Fermentation of non digestible substance • Vitamin production • Energy extraction • Neurotransmitter synthesis	• Colonization resistance • Antimicrobial secretion • Innate and adaptive immunity	• Epithelial cell growth and differentiation • Intestinal Villi and crypt development • Tight junction permeability

Dysbiosis of Microbiota and its Management:

1. Microbiome modulation (prebiotic and probiotics)
2. Microbiota base solution
3. Mediterranean diet: It is a dietary pattern characterized by:
 - High intake of fruits and vegetables, legumes, cereals
 - Olive oil and fish consumption
 - Low meat and dairy products consumption
 - Recommended for cardiovascular disease, cancer, metabolic disorder

Gut the second brain:

- The gut is called the “second brain” because of the enteric nervous system (ENS), which is a neural network in the digestive tract that control digestion and has many similarity with function of the brain.
- All neurotransmitters found in CNS are also detected in ENS.
- Environmental or genetic influences on CNS development and function might also affect the ENS.
- During CNS development serotonin is neurogenic and plays critical roles in cell division, migration, and differentiation.
- CNS functions modulated by serotonin include mood, depression, anxiety and cognition.
- The gut neurons can synthesise neurotransmitter (serotonin 95%) (3% in brain).

Connections with brain ^(1,2)

1. Neuronal Pathway:

Brain is connected to gut through not only spine but also vagus nerve.

The gut microbiota influences the synthesis and secretion of neurotransmitter, (Serotonin, Gamma-amino butyric acid, Dopamine, NE, Glutamate, and Acetylcholine).

Gut signal can activate the ENS and primary afferent nerves as well as transmit messages to brain through the vagus nerve and sympathetic nervous system.

2. Neuro-endocrinal Pathway:

HPA axis:^(1,2)

It regulates digestion, mood, emotion, energy and most notably, the stress response (fight – flight mechanism). Significant impact on gut physiology, as a result of HPA axis activated adrenal gland release cortisol, regulating immune cell activity in gut, altering gut permeability, and barrier function and affecting gut microbiota composition. This communication is mediated by several microbially derived molecules that include SCFAs, secondary bile acids, and tryptophan metabolites. The HPA axis & ANS regulate each other and collaborate with the immune system to regulate gut health.

Gut Brain Axis Barrier:

- Blood Brain Barriers
- Gut blood barrier

These both barriers play a very crucial role in defending the pathogenic organisms and also allowing only the require nutrient to pass through, but altered gut microbiota change the Gut permeability. When permeability of both barriers increases, leads to various neurodegenerative disorder and psychiatric disorder.

Enterochromaffin cell signalling:

- ECC are responsible for production of serotonin in gut.
- 95% serotonin is present in gut and 5% Serotonin is present in brain.
- Function: gut motility, gut secretion, appetite, sexual behaviour, temperature regulation, and pain sensation.
- Serotonin is released and synthesized by spore forming bacteria of gut.

3. Neuro Immune Pathway:

- The gut microbiota regulates the function of tight junction and Toll-like receptors in the gut barrier and BBB, adjusts the differentiation of lymphocytes, and impacts the brain via the immune pathway.
- Additionally the bioactive products of the microbiota also influence the microbiota- gut-brain axis.
- Basically cytokines, IL, various other microbiota metabolites which are produced by microbiota plays a crucial role in neuroimmune pathway

ADHD: ⁽³⁾

- It is a Neuro developmental disorder.
- Brain of ADHD people tend to mature slowly than normal person.
- Impaired brain activity in distinct neuron networks e.g. Default Mode Network is more active in people with ADHD which can interfere with task processing and lead to attention deficient and hyperactivity.
- Research shows that lower level of omega-3 fatty acid or may not be able to tolerate gluten.

- Advice ketogenic diet (Low carbohydrates, high fat and adequate protein).
- Body burn fat for fuel instead of carbohydrate. Thus there will be neuron network stabilizing, cognitive level improved, reducing neural inflammation.

Autism:

Autism is a Disease that fall under the group of neurodevelopmental abnormality, impaired neural connectivity and damaged synaptogenesis.

- Dysfunction in these neurons communication lead to social and communication difficulties experienced in autism.
- Research suggested that Vitamin D, Pyridoxine and magnesium deficiency associated with autism.
- Studies reveal high doses of pyridoxine and magnesium is helpful in management of autism.
- Gluten free diet, gluten free grain (corn, rice, buckwheat, millet).
- Casein free diet : dairy alternative (potato based milk, coconut milk, almond milk, cashew butter and plant base butter and cheeses made from almond, coconut and cashew).

Nutrition and Mental Health:

Balanced nutrition influences mental cognition, memory and has a crucial effect on our thinking, emotions, and behaviors. Role of Food in the treatment of Neurodevelopmental Disorders: ⁽³⁾

Food can be divided in two categories:

1) Macronutrients: Macronutrients are needed by the body for growth and energy purpose. Macronutrients required by body in large amount are-

1. Carbohydrates: Brain needs energy (20% of all energy needed by the body is used by the brain). This energy comes from blood glucose. Eating rich carbohydrates triggers the release of insulin in the body. Insulin helps let blood sugar into cells where it can be used for energy and simultaneously it triggers the entry of tryptophan to brain. Tryptophan in brain affects neurotransmitters level. Low glycaemic index foods are more likely to provide a moderate but lasting effect on brain chemistry, mood and energy level than the high GI food.

2. Proteins: Proteins are made up of amino acids. Body uses amino acids to build and repair muscles and bones and to make hormones and enzymes. They can also be used as an energy source. There are 11 non-essential and 9 essential amino acids. Neurotransmitters in the brain are made from amino acid. Dopamine is formed from tyrosine and serotonin is formed from tryptophan. Deficiency of this two amino acids leads to low mood and aggression in the A.D.H.D. patient.

3. Fats: The brain is one of the organs which have highest level of lipid (fats). Brain is composed of fatty acids (omega-3, omega-6). Gray matter contains 50% fatty acid that are polyunsaturated in nature (about 33% belong to the omega-3 family) and supplied through diet. Omega -3 fatty acids are essential for the development and functioning of the brain such as neurotransmission, neurogenesis, and neuroinflammation. The deficiency of omega -3 fatty acids may increase susceptibility to different mental disorders like anxiety, depression, dementia, bipolar disorders, attention-deficit hyperactivity disorder, schizophrenia, autism.

2) Micronutrients: Micronutrient needed by the body in small amounts which are-

Vitamins: Vitamins are organic substance that we ingest with our foods, and that help to trigger other reaction in the body. Vitamin B acts as cofactor in the synthesis and regulation of dopamine and serotonin neurotransmitters.

- Some neurotransmitters are synthesized with Vitamin B6 and B12 as precursors. Vitamin B12 supplementation protects the myelin sheath of nerve fibers and improves mental cognition and cerebral capacity. Thus prevent Cognitive impairment, confusion and depression. Excess supplementation of vitamins for a year improved emotions and behavior in all test subjects. These improvements were primarily due to vitamins B1, B2, and B6. Vitamin B9 or Folic acid significantly affects mental cognition and function as it modulates the synthesis of serotonin, nor epinephrine, and dopamine. Folate deficiency manifests in the form of depressive symptoms, neural tube defects in fetus and neurological disorders (dementia) in adults.

- Vitamin E acts as protective antioxidant and anti-inflammatory activity. Its deficiency can produce mild cognitive impairment.

- Vitamin - D has neuroactive steroid play a role in brain development, regulating neuroinflammation in the brain. Deficiency cause cognitive decline and executive dysfunction. (e.g. Autism, ADHD)

Omega -3 fatty acids play a crucial role in dopaminergic and serotonergic neurotransmission.

Minerals: Micronutrients are required for maintaining normal health and preventing disease. They act as a co- factor and co-enzyme. Magnesium affects cell energy metabolism, synaptic transmission, nerve conduction, and cell membrane stability. Deficiency produces depression, irritability, delirium. Iron helps the body to produce neurotransmitters like Serotonin, Dopamine, NE. Its deficiency causes Depression, Anxiety and Autism. Iodine deficiency cause hypothyroidism which result in secondary depression. Hypothyroid mother may deliver idiotic Cretin child.

A case of ADHD child improved by dietary changes along with homoeopathic medicine:

Name: Master A.P.

Age: 16 years

Sex: Male

Address: Anand

It is a known Case of A.D.H.D. The milestones were delayed. When child was put in to playgroup, he was not able to pick up and learn as fast as other students. Patient's parents bring him to the Special child's learning school and homoeopathic OPD since last 9 years. There is a gradual improvement. This year dietary modifications were suggested that helped the child to recover fast.

Milestones: Delayed

- Sitting - 9th month
- Walking - One and half year
- Speaking - at 2 years
- Dentition - 10 months
- Birth Weight – 3.5 Kg

Mother's History during Pregnancy: Conception late: at the age of 30 years after I.U.I. and 3 prior failed attempts. History of Abortion at 2 months pregnancy at the age of 26 years.

Psychological evaluation Report: (12/7/2017)

IQ – 57 Retardation level Mild

General comprehension – 7

Arithmetic - 1

Similarity – 4

Vocabulary – 5

Digit Span -5

Hb – 12.7 gms/mol

Case is continually managed by one Peripheral O.P.D. of Dr. V.H. Dave Homoeopathic Medical College and Smt. S.I.Patel(I) Hospital.

Observations in clinic:

In 2017 – Violent behaviour. Bites and slaps when not done according to his will.

In 2022 – No violent behaviour, but sometimes when his wishes are not fulfilled. Intelligent, tries to find out the solutions for anything even using ' youtube' to find the answer. Good in answering at home but less at school.

In 2023 – Hits and disturbs others in their work. Does not want to study. Laughter at inappropriate time and place. Weight gain. Premature greying of hair.

In 2024 – Communicates. Excessive Blinking of eyes. Difficult to focus on work. Smiling while answering at school.

In 2025 one complain that demanded attention that is blinking of eyes, as a part of symptom of A.D.H.D. Along with medications mother was advised to give the child food with no sugar, no chocolates, no bakery items as well as no caseinogens in diet. Treatment and follow-ups showed drastic improvement in the child.

Repertory sheet with Totality:

	Calc.	Nux-v.	Bor.	Lyc.	Phos.	Nat-m.	Bell.	Acon.	Anac.	Croc.	Hyos.	Ign.	Coff.	Puls.	Sep.	Stram.	Carc.	Cupr.	Lach.	Ph-ac.
Total	7	7	6	6	6	5	4	7	6	5	5	5	4	4	4	4	3	3	3	3
Rubrics	5	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3
Kingdom	Blue	Green	Blue	Green	Blue	Blue	Green	Green	Green	Green	Green	Green	Green	Green	Red	Green	Red	Blue	Red	Blue
C_Basic – Mind; Shrieking, screaming, shouting; children, in(71)	1	2	3	1	1	1	1	2	1	1	1	2	1	2	1	1	1	1	1	1
C_Basic – Mind; Weeping, tearful mood; general; alternating with; I(49)	2	1	1	2	1	1	1	2	1	2	2	2	2	2	2	2	1	1	1	1
C_Basic – Eyes; Blinking(20)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C_Basic – Mind; Learning; difficult(27)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
C_Basic – Mind; Anger, irascibility; violent(102)	2	3	1	2	1	2	1	3	1	2	2	1	1	2	1	1	1	1	1	1

Repertorial result:

Calcarea carb 5⁷ , Nux vom 4⁷ , Borax 4⁶ , Lycopodium 4⁶

Treatment: Calcarea carb 30 one dose, S.L. BD

Follow-ups:

Date	Symptoms	Treatment	Observation
16/1/25	Sudden screaming, involuntary laughter, mischievousness, cheeks flushed, blinking of eyelids constant	Calcarea carb. 30 one dose, S.L. B.D. for 7 days	Patient was advised less sugar, less salt and high protein diet and caseinogens free diet, looking at the high activity.
23/1/25	Screaming reduced, involuntary laughter reduced, learning improved	C.P. 6X O.D. for 7days	Improvement without aggravation
6/2/25	Improvement in learning, involuntary blinking reduced, increase in height and weight, palms sweaty	C.P. 6X O.D. for 7 days	Recovery of patient
13/2/25	Reduced involuntary blinking , sweaty palms, Premature greying of hair	Silicea 30 one dose, S.L. B.D. for 7 days	Recovery of patient with new symptom appear on physical plane
3/4/25	Flushed cheeks, blinking stopped	F.P. 6X O.D. for 7 days	Recovery of patient

CONCLUSION:

This case shows there is a definite connection between our diet and mental development, thoughts and mood. Thus, a good nutritional diet is helpful on maintaining a positive functioning of Gut Brain Axis and also helpful in neurodegenerative disorders like A.D.H.D.

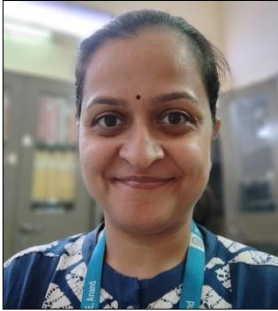
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