

IMPORTANCE OF DIET MODIFICATION IN AUTISM

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Abstract

Autism is a behavioral disorder commonly evident in infancy and early child hood resulting in broad range of behavioral problems. A concrete etiology is still obscure but biological modifications in food and supplements have shown drastic improvement in learning disability. The present article deals with the importance of avoiding gluten, casein foods, food additives, phenolic and salicylates which help to reduce the symptoms like hyperactivity, tandrums and simultaneously promoting the learning abilities. Supplementation of vitamins and minerals along with probiotics has been discussed with their importance in the article.

Key Words: Autism; Gluten free-Casen free food; Probiotics; Multivitamins; Salicylates.

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INTRODUCTION

It was Swiss Psychiatrist Eugen Bleuler in 1910 who first coined this term when defining symptoms of Schizophrenia. He derived it from the Greek word autos (Self) and used it to mean morbid self administration referring to “autistic withdrawal of the patient to his fantasies, against which any influence from outside becomes an intolerable disturbance”.^[1]

Most recent reviews estimate a prevalence of one to two cases per 1,000 people for autism, and about six per 1,000 for ASD (Autism Spectrum Disorders), with ASD averaging a 4.3:1 male-to-female ratio.^[2] The number of people known to have autism has increased dramatically since the 1980s, at least partly as a result of changes in diagnostic practice. The number of reported cases of autism increased dramatically in the 1990s and early 2000s.^[3] This increase is largely attributable to changes in diagnostic practices, referral patterns, availability of services, age at diagnosis, and public awareness.

Autism is a developmental disorder characterized by impaired social interaction, communication, learning disability and repetitive behavior.^[4] It commonly appears in the first 3 years of life and affects the brain's normal development.^[5] American Academy of Neurology has pointed out various indicators for diagnosing childhood autism. They include: Loss of language and social skill, poor eye to eye contact, does not utter a single word by 16 months and does not use more than 2 words by 2 years, does not play with the toys, does not smile, repetitive speech.^[6] Thinking about the causative factors for autism is very important but there is no concrete evidence to be pinpointed as causative factors for autism.

The etiological hypothesis for autism includes: Genetic abnormalities, obstetric complications, exposure to toxic agents, prenatal infections, core bio chemical

mechanism in the body due to metabolic causes.^{[7][8]} Though many hypothetical factors for autism has been discussed, some strong data regarding biological markers were brought out by Norwegian scientist, Reichelt^[9] and his co workers found an increased level of peptides (a break down product of protein) in urine collected over 24 hours from people with autism. These peptides were in part breakdown product derived from gluten and casein. They strongly proposed that something is primarily wrong with the digestive process in gut, food substance especially proteins are not properly digested resulting in these peptides, which permeate the gut enter the blood stream and even cross the blood brain barrier. These peptides manage to enter the brain where they act as neurotransmitter and have the same effect of endorphins (opioid) which bring defects in cognitive, behavioral activities.

1. Gluten free-casein free diet

Glutens are proteins contained in wheat, rye, and barley with tough elastic character. Within gluten there are actually four main proteins: albumins, glutelins, globulins and protamins. These are dangerous because of their partial break down in the gut. Caseins are phosphoproteins present in milk. The peptides are derived especially from milk products (casein) as well as from wheat, barley, and oats. Gluten are not properly broken down and digested in people of autism and those glutens are released into the blood stream by the weak leaky gut. Then they cross the blood brain barrier and works on neurotransmitter, which results in increase of tandrums, hyperactivity and other neuropsychiatric symptoms. Restriction of gluten free, casein free diet improves the learning ability along with control of tandrums and hyper activity.^[10]

2. Restriction of food additives

The intestinal balances get disturbed due to the intake of chemical poison which has been

added with food to promote taste or as preservatives or coloring agents. These toxic chemicals may alter the acidity of gut causing depletion of vitamins and minerals. The most common food additives are the taste promoting agents like monosodium glutamate and sodium benzoate which is a preservative. Some artificial colors like tartrazine, carmisine are equally dangerous.^[11]

3. Supplements

The social, language and behavioral problems that occur with autism suggest that the syndrome affects a functionally diverse and widely distributed set of neural system. Marine and other plant oil rich in omega 3 fatty acids are essential fatty acids which cannot be synthesized in the body but vital for over all function of brain and heart. Supplementation of omega 3 fatty acids has shown improvement in learning skills with respect to language and behavior suggesting its action on neural system.^[12]

Multi vitamins including vitamin A has a major role to play in signating potency of brain, the folic acids controls the level of homocysteine in blood which are known to damage brain cells when at elevated levels, vitamin c plays a key role in maintaining health of nerve cell, it also boosts the production of myelin which sheaths the nerve fiber, helps to insulate against the brain electric impulses. Vitamin c is an anti oxidant which eliminates atom and molecules known as free radicals which can damage the brain cells. Zinc and magnesium has a vital role to play in axonal and synaptic transmission and is necessary for nucleic acid metabolism and brain tubulin growth. Children with insufficient levels shows lowered learning ability; lethargy and mental retardation. Studies have shown that hyper active children have deficiency of zinc and vitamin B6.^[13]

4. Yeast free diet

The intake of refined sugar, fermented foods like breads, vinegar, alcohol etc will increase the yeast growth which inturn will make toxic chemicals in the gut and subsequently effecting the development of brain.^[14]

5. Exclusion of phenolic compounds and foods high in salicylates

Some individuals lack the enzymes needed to break down compounds in these foods resulting in raised level of neuro transmitters such as serotonin which may affects behavior.

6. Probiotics

Probiotic are preparations of non pathogenic micro organisms which modifies intestinal micro flora have direct effect on brain. Researches in University College of Carck in Ireland conducted studies in mice showed that probiotic strain caused changes in the expression of receptors for the neurotransmitter GABA in mice brain. Intake of Probiotics can benefit several neurotransmitter abnormalities seen in autism children.^[15]

DISCUSSION

There is no definite treatment for autism till date, but autism therapies like ABA (Applied Behavioural Analysis), speech therapy and other communicative therapies are being done to lessen the deficiencies and abnormal behavior. To prepare the child to receive these therapies, it is important to bring some modifications in the diet. A research conducted in Sharada Samajam Research Centre, Shornur (An Ayurvedic Autism Treatment & Research Centre) has shown that biological modifications in diet have attained good results in a large community of people.^[16]

Dietary restriction of the milk can cause deficiency of calcium, vit.D, vit.B and calories. The child should be supplemented with calcium and vitamin D rich food as diet, but it also essential to supplement additional source of multi vitamins and minerals. Probiotics only helps to regulate the nature of the gut and thereby improving the absorption. It is not easy to adopt the gluten free casein free diet, as it forms a major part of our diet and base food for the growing children but the studies have noted that autistic boys have significantly thinner bones if they are on casein-free diets.^[17]

Though unable to treat autism, the aggressive Neuro-psychiatric symptoms can be controlled with small adaptation to various foods habits. It also promotes learning ability through which behavioral and communication skills are improved.

CONCLUSION

Biological treatments have attained increased popularity due to its results shown in a large community of people. It is not easy to adopt the gluten free casein free diet as it forms a major part of our diet and base food for the growing children. Dietary restriction of the milk can cause deficiency of calcium, vit.D, vit.B and calories. The child should be supplemented with other calcium and vitamin D rich food as diet, but it become essential to supplement additional source of multi vitamins and minerals. Probiotic only helps to regulate the nature of the gut.

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