Autism handbook

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INTRODUCTION

ASD may be caused by environmental factors such as heavy metals and infections leading to epigenetic changes in genetic susceptible children. There is still no cure for autism.

Biomedical treatment is first coined by Dr Bernard Rhimland, the founder of defeat autism now. (www.autism.com). Biomedical treatment entails using higher dose of certain vitamins and minerals which are important in the metabolic pathways for example, methylation cycles, Kreb cycles which are important for detoxification, cell repair and energy production.

The dose of some vitamins will be higher than the RDA dose. This is necessary as the body is using up a lot of these foods derived vitamins which function as cofactors. As the body is using up a lot of these cofactors, you will need to supplement your child with a higher dose. As his metabolic functions improve, we can lower the dose or cut it down altogether.

Most vitamins are safe as they are water soluble, however fat soluble vitamins can cause toxicity if taken in high doses, and these are vitamin A, D, E and K.

Biomedical treatment should be used in conjunction with occupation therapy, speech therapy and other behavior interventions.

What is Autism

According to DSM V criteria, the diagnosis of autism is made if the child exhibits the following signs

- Delayed verbal , non verbal or social communication
- Restricted , repetitive pattern, behaviour , interest or activity.
- Fixed
- Hyperactivity of hypo activity.

WHY IS EARLY DIAGNOSIS IMPORTANT

With early intervention. There is an immense capacity for children's brain to recover from any brain injury, this is called neuronal plasticity. We think that children have this ability to heal till about 6 years old. This does not mean that children above 6 years old have not hope, their healing process would be slower as compared to younger children.

Thus is important to diagnose a child with autism earlier that 3 years old. Signs that you may see in children with risk of autism include:

Birth to 6 months

- Flaccid body tone
- Lack of responsiveness or inattentive to people or things
- Lack of excitement in presence of parents
- Lack of anticipatory posturing on being picked up
- Vacant stare
- Less than normal activity
- Delayed milestones
- Eye squint
- Irritable mood, seldom smile
- Sleep more or hardly sleep

12 months to 24 months old

- Does not approach parents
- Flattened affect
- No purposeful activity
- Facial expression does not convey intention or meaning
- Failure of normal language

WHAT IS THE CAUSE OF AUTISM

Up to now, there is no clear cause of autism. Genetic causes such as Fragile X, Rett's syndrome can account for 2 % of cases.
Other obvious causes of autism can be attributed to brain infections either in utero or after the child is born. Perhaps this can account for another 8 % of cases.

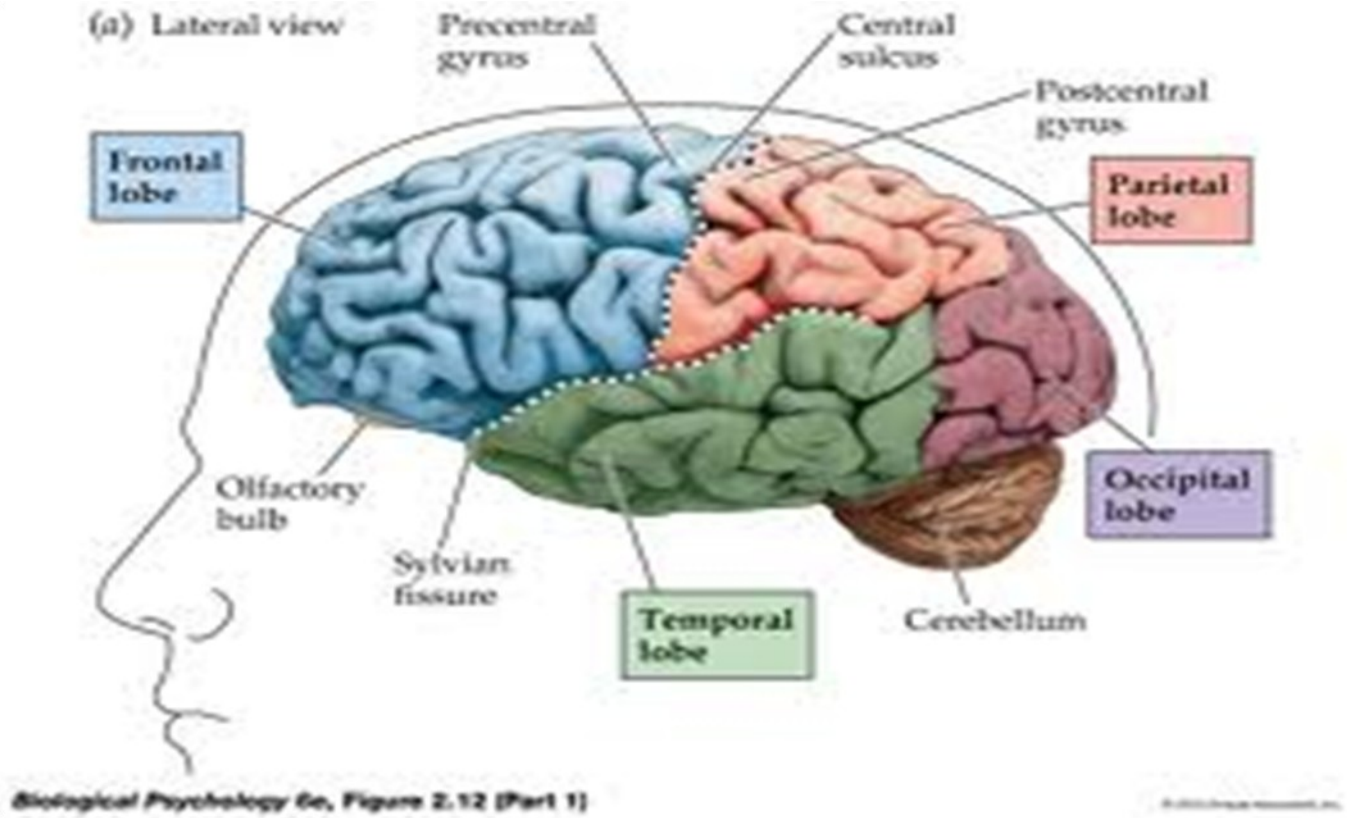
The rest of autism cases can be explained by 3 main hypothesis

1. Brain nutrient deficiency
2. Brain autoimmunity
3. Environmental toxicity with impaired detoxification

BRAIN NUTRIENT DEFICIENCY

The brain is segmented into different lobes with each lobe having a specific function.

Based on the symptoms , the whole brain is affected



Frontal lobe

Reasoning

Motor skills

Social

Attention

Parietal lobe

Tactile, touch, pressure, pain

Verbal memory

Language

Temporal lobe

Speech

Memories

Occipital lobe

Visual

Cannot identify colours, objects

Midbrain

Body movement, eye movement

Dopamine centre

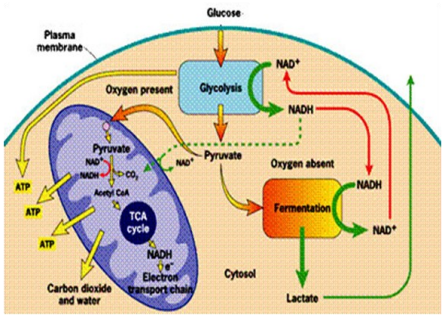
Cerebellum

Coordination

BRAIN NUTRIENT DEFICIENCY

The brain is one of the most metabolic active organs in our body

Although the brain mass accounts for only 2% of our body weight, it requires



1. 15% of the cardiac output
2. 20% of Oxygen needs
3. 25% of glucose metabolism

The glucose needed by the brain is converted to ATP or adenosine triphosphate. ATP is a form of fuel currency that all living cells use to function. This is done though the process of glycolysis which produces pyruvate. Pyruvate is used by the cell mitochondria to produce more ATP. Another mode of ATP production is through the beta-oxidation of fats in the cell mitochondria.

The mitochondria would be considered as power generators in our body for ATP production.

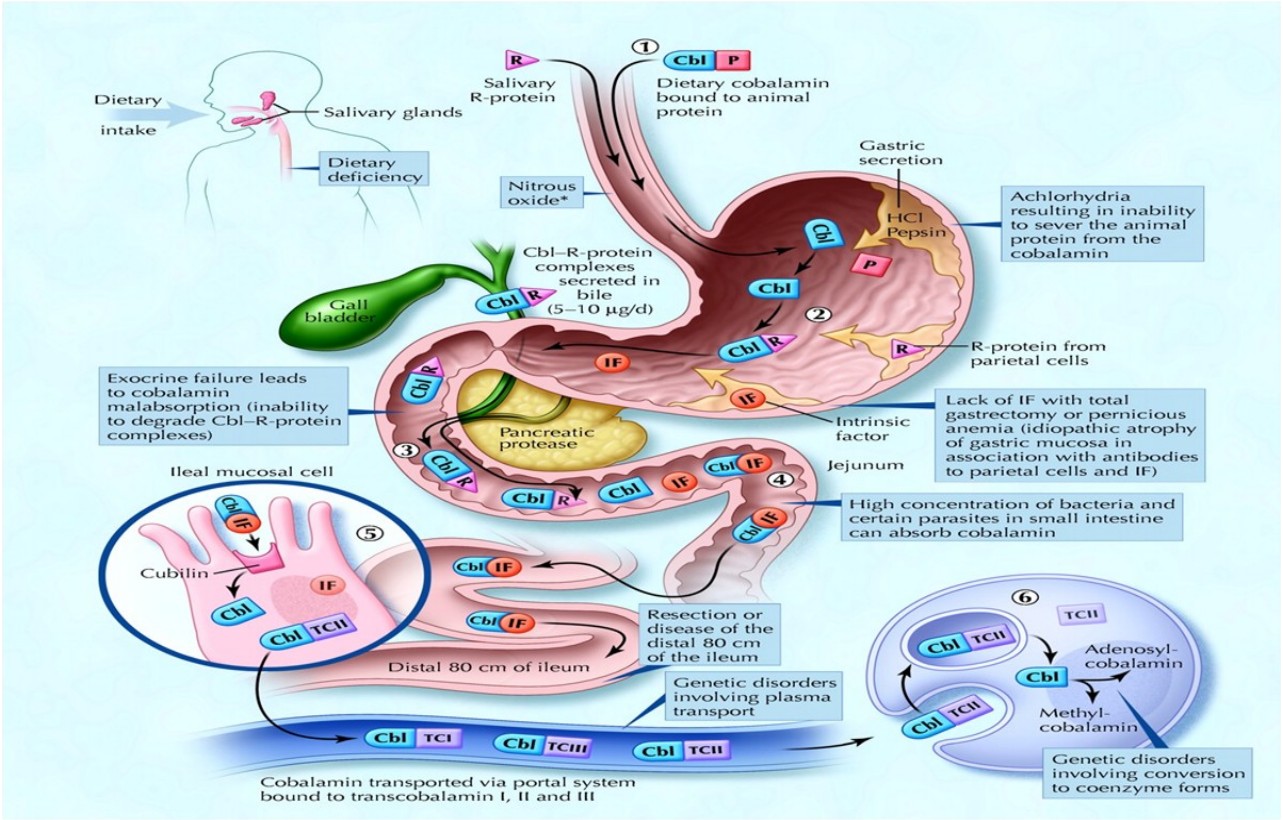
In autistic children, the production of ATP is impaired, thus the brain does not get enough fuel for proper function.

BRAIN NUTRIENT DEFICIENCY

For adequate nutrition to reach the brain, the digestive tract needs to function properly.

Digestion starts in the mouth with proper chewing of food. In autistic children, a lot do not chew their food properly, some have very restricted food preferences and may be eating a lot of junk food which has low nutritional value.

Also their digestive track may not be producing enough enzymes to break down the protein in diet. This leads to gluten and casein food intolerances. This is the reason why some children benefit from digestive enzymes.
Also some have malabsorption , they may eat a lot but do not seem to gain any weight. The small intestines may not be able to absorb the food nutrients as well as normal children. Some complain of pain after eating and a lot of them have bloated abdomens after meals. This is caused by fermentation of undigested food due to intestinal dysbiosis. Giving probiotics would benefit the child.



Autoimmunity

Microglia cells are immune cells in the brain. These immune cells serve to protect the brain against foreign invasion of pathogens , e.g. bacterial , virus and toxic chemicals and metals

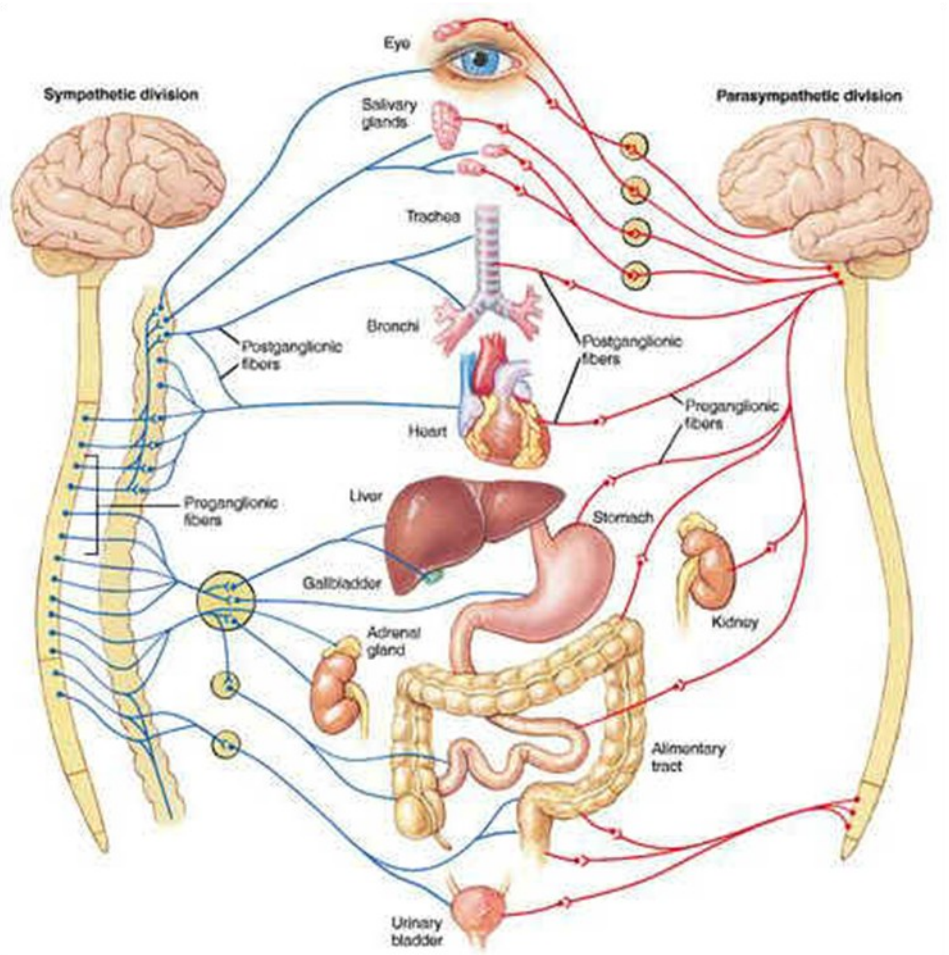
In children with autism , it is noted that their brains have about 20 % more microglia cells in the cerebrum and 120% more in the cerebellum. The cerebellum is the nerve control centre of the brain.

The immune cells produce inflammatory cytokines which in excess damages the actual brain cells.

The increased number of microglia cells may be a direct response to exposure to brain pathogens or toxic substances in the brain or as a response to secondary infection in other parts of the body such as

1) streptococcal infections manifesting as common ear infections and sore throat
2) Gut bacterial

Our gut is often referred to as our second brain. Our intestines produce serotonin which affects our mood and behaviour.
It has been show that our gut flora or bacterial can affect our sensory perception and this may explain why obese people have different gut bacterial as compared to thin people.



ENVIRONMENTAL TOXINS

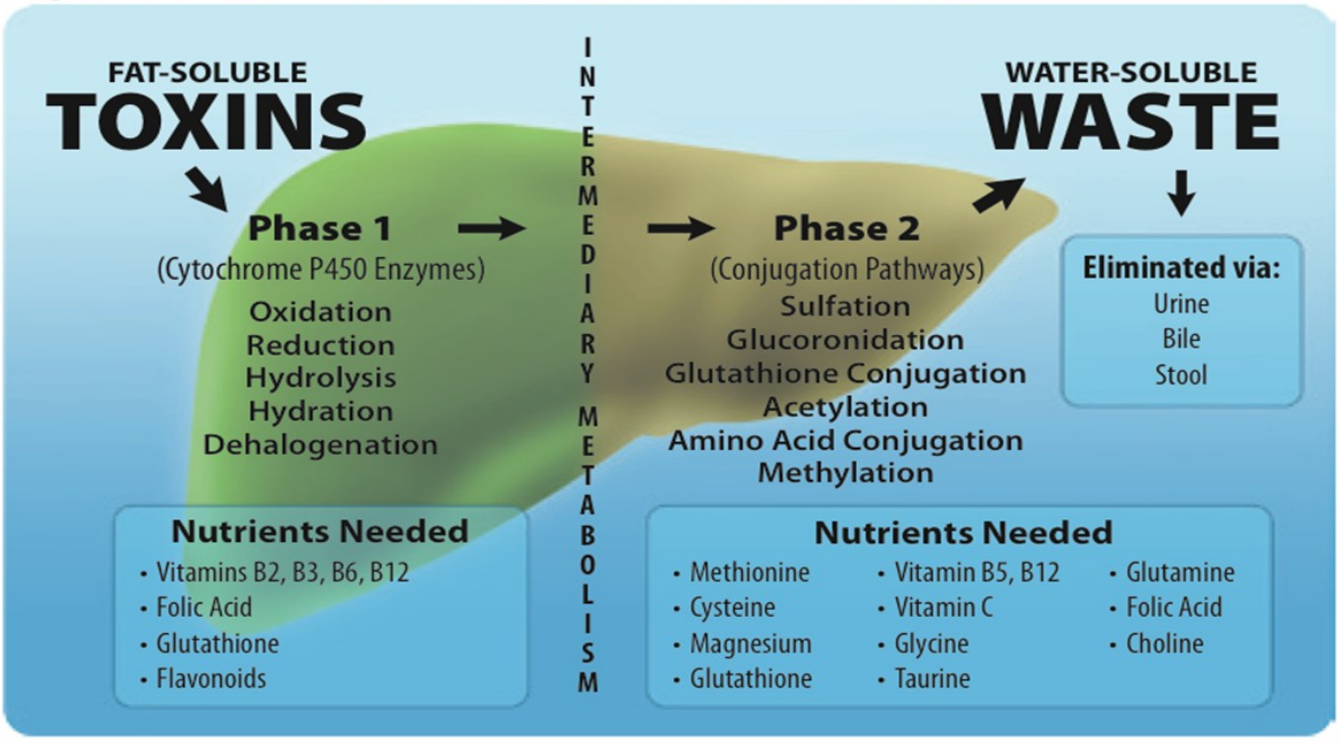
There is an increasing amount of toxins in our environment , it is in our food chain and our water supply.
The toxins are the heavy metals, such as cadmium, arsenic, lead, mercury, aluminium, pesticides, insecticides and food additives.

Many of these chemicals have not been tested adequately. For example, only recently, environmental scientist have found the detrimental effects of BPA used in hard plastic bottles which can affect the hormones in humans.

Our body is designed to neutralize these environmental toxins and chemicals, however if this system which involves our kidneys and liver is overwhelmed , it will lead to an accumulation of heavy metals and chemicals in our system.

Link on effect of mercury on nerves.
Video http://www.youtube.com/watch?v=RNxQc4mkg90

Figure 3. Phase I and II Liver Detoxification



HOW CAN AUTISM BE TREATED

Interventional therapies such as ST , OT, PT should be used in conjunction of biomedical treatment . If necessary, medicine will be used to regulate the child before biomedical treatment exhibits clear results.

Results will be seen usually by 3 months as it would take time for the body to respond and auto regulate

KEY POINTS FOR BIO-MEDICAL TREATMENT

1. Reduce inflammation
2. Adequate nutrition
3. Aid digestion and absorption
4. Maintain healthy gut
5. Treat underlying infections
6. Healthy diet
7. Clean environment , remove toxins

HOW TO MINIMIZE THE RISK OF AUTISM

1. Reduce Stress during pregnancy
2. No amalgam (mercury fillings)
3. Reduce need for medicine esp. panadol and gastric medicines
4. Healthy diet
5. Birth in home country
6. NVD
7. Reduce risk of infections
8. Supplementation
9. Clean environment