The Biomedical approach to Autism

Dr Antony Underwood

M.B. B.S. (Syd.) FRACP

Sleep

- Sleep disorders very common
- Lower levels of melatonin in children with autism.
- Treat constipation
- Investigate food and chemical intolerances
- Chronic ear infections
- Dental abscesses
- Melatonin often very useful

Unblock the bowel!

- Very Common
- Insidious onset
- Often passing soft stools daily and not perceived as constipation
- Difficult to detect on examination.
- Abdomenal x-ray to diagnose
- Stool softeners e.g. lactulose (also good prebiotic)
- Magnesium oxide/citrate (very good as a bowel flush)
- Vit C

GIT and diet and autism

- Caesin and gluten free diet
- Low sugar and low chemical diet
- Salicylates, amines and glutamates
- Specific carbohydrate diet
- Gastrointestinal dysbiosis worsened by sugars and carbohydrates
- Low oxalate diet

Gluten and caesin free diet

- The only way is give the diet a trial for at least 3 months STRICTLY!!
- Clues it may be of benefit:
- Regressive autism
- Night waking, giggling or head banging
- Constipation and/or diarrhea
- Red ears and cheeks
- Craves wheat and dairy products. Addictive behavior.

Opioid Excess Theory of Autism

- This is not an allergy but a drug effect of the foods
- Poor digestion of casein and gluten
- Inactive DPP_4 enzyme
- Morphine like peptides e.g. casomorphine and gliadomorphine
- Absorbed into the blood stream through a leaky gut.
- Crosses the blood brain barrier and affects behavior.
- Zoning out and increased repetitive behaviours and poor social.

Potential Results

- More aware, less brain fog
- Better eye contact
- Increased Language
- Decreased pain tolerance
- Red ears and cheeks cease
- Improved bowel function
- Better sleep

Metallothionein Dysfunction

- Pfeiffer Treatment Centre USA
- Dr Bill Walsh
- Metallothionein and autism 2001
- Study 500 autistic children
- Abnormal copper/zinc ratio
- Metallothionein dysfunction

Metallothionein Dysfunction

- Short, cysteine rich proteins: 61-68 Amino Acids
- 4 types
- MT 1 & 2 are present in all cells in the body
- MT 3 is a neuronal growth inhibitory factor found primarily in the brain.
- MT 4 found mainly in the squamous epithelial of the upper GIT.

Metallothionein functions

- Taste and texture discrimination in tongue epithelia
- Hippocampus function & behaviour
- Development of emotional memory and socialization
- Barrier protection against Heavy metals: gut; liver; blood brain barrier & within the brain
- Works hand in glove with Glutathione (body's natural antioxidant)

Why MT dysfunction?

- Genetic predisposition for weak MT function
- Heavy metals
- Antibiotics (reduce Hg excretion by 10 fold)
- Any stress
- Illnesses
- Change
- Travel

Treatment of Metallothionien

- Phase 1
- Zinc 25mg daily
- Manganese 10mg
- Magnesium 22mg
- Pydridoxine 50mg
- 5-P-5 (Vit B 6 active form) 12.5mg
- Vit E

Treatment of Metallothionien

- Phase 2
- After 3 months of intense zinc loading
- MTPromoter: Slowly introduced
- Combination of Amino acids
- Selenium
- Helps build the MT protein.

Heavy metal toxicity

- Heavy metals can accumulate and cause gut, brain and immune dysfunction
- Typical heavy metals, mercury, arsenic, cadmium, antimony and lead
- Sources:
- Environment: air and water pollution
- Foods: Industrial waste recycled as fertilizers.
- Dental amalgams

Mercury toxicity

- Highly neurotoxic, kills brain cells
- ½ life in the brain is 40 years
- Individual sensitivity (some are highly sensitive to small amounts). Eg Pinks disease
- Lowers Immunity & predisposes to autoimmunity.

Other Metals

- Arsenic: treated pine
- Antimony: fire retardant materials
- Aluminium

Heavy Metals Diagnosis & assessment

- Blood test reflects very recent exposure
- Important to identify ongoing environmental exposure
- Hair Analysis good screening test, reflects longer term exposure
- Urine test (best test), random or provoked urine test after a chelating agent is given eg DMSA

Drug Treatment of Heavy metal toxicity

- DMSA orally/suppositories given in fortnightly intervals. Good for mercury & lead
- DMPS intravenous: more invasive but quicker results or transdermal: every 48hours, slower but more constant 'pull' Easier to adminster.
- EDTA intravenously, transdermally and suppositories (especially lead chelation)
- Requires Physician guidance and monitoring with regular blood testing. Possible liver and white cell toxicity.

Oxidative stress Model of autism

- Genetic weakness results in oxidative stress
- Intestinal and brain barrier incompetence
- Environmental insult disables Metallothionein and glutathione

Antioxidant Therapies in autism

- Metallothionein promotion
- Chelation with DMSA, DMPS, EDTA
- Methyl B 12: 60mcg/kg subcutaneous injections every three days
- Transdermal or IV Glutathione
- Zinc, selenium, CoQ10,taurine, Vitamins A, C, D & E.
- Alpha lipoiec acid

Methylation

- Most are undermethylators
- Higher percentage (up to 30%) carry the MTHFR SNP
- Responsive to:
- Methyl B 12 especially as subcutaneous injections
- Met-5-Folate especially the homozygous C677T SNP.
- Responds to Trimethyl Glycine (TMG)

Over methylation

- Reactive to Methyl Folate, Methyl B 12, TMG, SAMe and Methionine
- Better with
- DiMethyl Glycine (DMG)
- Often have the COMT SNP especially the V158
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Fine tuning the diet

- Your child may be sensitive to other foods
- Refine the diet
- Elimination and rechallenge the gold standard of food sensitivities

Salicylates, Amines and Glutamates

- Important group
- Significant in 10%-20% patients
- Very high in tomatoes, strawberries, Broccoli, watermelon, kiwi fruit, grapes, sultanas etc.
- Symptoms: hyperactivity, 'Jekyll & Hyde' behaviour poor sleep and perioral rash
- Highly reactive to other chemicals, flavours, additives even Vit C

Specific Carbohydrate Diet

- Elaine Gotschall 'Breaking the viscous cycle'
- Restriction specific carbohydrates
- Better gut function
- Starves pathogenic organisms in the gut
- Difficult diet needs close monitoring
- Not for everyone but can help difficult cases

Tests

- Blood tests:
- RAST (good for allergies but not for food intolerances)
- IgG 93 food panel (ARL Melbourne) most accurate but expensive!
- Skin prick tests:
- often negative for food sensitivities, but good for nut, egg, external allergies.

Tests

- Plasma/Serum Zinc
- Serum Copper
- Ceruloplasmin
- Ferritin
- Vit D
- Vit A
- Urinary Iodine
- MTHFR

Leaky Gut
(Increased intestinal permeability)

- Intact digestive system allows only fully digested food across the gut wall into the blood stream.
- Amino acids, fatty acids and saccharides.
- Damaged gut lining allows the passage of larger, incompletely digested molecules across the gut wall.
- The gaps between the cells is increased
- Increased Zonulin
- Loosened tight junctions

Causes of Leaky Gut

- Food allergies
- Antibiotics
- Parasitic infection
- Pathogenic bowel bacteria
- Junk food diet
- High sugar and carbohydrate diet
- Heavy metal toxicity
- Hereditary e.g.. Family history of irritable or inflammatory bowel disease.

Antibiotic treatment of bowel pathogens

- Gram negative bacteria and clostridia
- Vancomycin: powerful, not absorbed kills anaerobes clostridia. Short lived results during antibiotic treatment.
- Metronidazole anaerobic infections
- Ciproxin: active against resistant gram negative organisms
- Antimicrobial herbs:
- Olive leaf extract, organol oil, pomgenrate and berberine.

Anti fungal treatment

- Probiotics
- Reduce sugar and carbohydrates
- Garlic, grape seed extract, Pau darco
- Olive leaf extract
- Nystatin (non absorbed safe)
- Fluconazole/Ketoconazole/Itraconazole (need to monitor liver function with extended courses)

Parasites

- Giardia
- Cryptosporidium
- Blastocystis Hominis
- Dientoamoeba fragilis

Treatment of Parasites

- Giardia: Metronidazole
- Blastocystis hominis:
- Antibiotic treatment
- Paramomycin 250mg TDS 10 days
- Herbal treatments
- Black walnut
- Artemesia
- Cloves

Listen to the child's expert

- Parents know their child very well
- The answers often lie in the history
- Careful observation
- Try one thing at a time
- 'Start low and go slow' with doses
- Parents want help and understanding along a difficult journey