

The Biomedical Approach

Dr. Antony Underwood

The Biomedical approach to Autism

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Biomedical Treatment of Autism

- Autism as a physical rather than a psychiatric disease
- Why the epidemic of Autism?
- Incidence as high as 1:100 children
- Boys:girls 4:1
- Cannot just be genetics, otherwise constant incidence eg Down's syndrome 1:600

Regressive Autism

- Most are normal at birth
- Normal in the first year of life
- Marked regression around 15-18 months
- Loss of eye contact, and speech
- Repetitive and self stimulating behaviours

Physical Symptoms

- Poor sleep, often night waking either giggling and laughter or crying and head banging
- Red ears and red cheeks
- Bowel problems: either constipation or diarrhoea or alternation between either state
- Poor immune system: recurrent infections eg ear infections.

Physical Symptoms

- High pain tolerance
- Poor reaction to heat and cold
- Touch, taste and sound sensitivities
- Self restrictive diet (often focussed on cow's milk and wheat based foods)

Autism and the gut

- High percentage of autistic children respond to gluten and casein free diets
- Improved bowel function
- Improved language:
- Improved eye contact
- Improved social interaction
- Better sleep

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Will gfcf diet help?

- 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 behaviors)

Opioid Excess Theory of Autism

- This is not an allergy but a drug effect of the foods
- Poor digestion of casein and gluten
- Inactive DPP4 enzyme
- Morphine like peptides e.g. casomorphine gliadomorphine
- Absorbed into the blood stream through leaky gut
- Cross the blood brain barrier and affect behavior.

Results

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

Other Foods

Sensitive to other foods?

- Refine the diet
- Elimination & 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
- Sue Dengate 'Fed up' RPAH allergy clinic

Tests

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

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Intestinal function

- Most have increased intestinal permeability (leaky gut)
- Allows peptides into the blood then brain
- Overgrowth of yeasts eg candida
- Bacterial overgrowth especially gram negative bacteria
- Parasites; Blastocystis hominis, Dientamoeba fragilis & Giardia

Investigations

- **Stool tests:** ARL Melbourne, Metamatrixs (DNA), Bioscreen (Melbourne), Great Plains Laboratory USA.
- **Amino Acid Urine testing:** Bioscreen (Melbourne), Great Plains Laboratory USA, Metamatrixs.
- Helpful in diagnosing upper GIT bacterial and yeast overgrowth

Unblock the bowel!!!

- These children are often chronically constipated
- Frequent slushy yellow stools despite constipation
- Abdominal x-ray
- Enemas, suppositories, stool softeners and bowel washouts are often needed

Treatment

- **Probiotics:** restore the normal bowel bacteria, Acidophilus, lactobacillus
- Avoid the use of broad spectrum antibiotics for viral infections
- **Prebiotics:** (gut repair agents) eg Ultra Probioplex, Replete, Colostrum Gold, Slippery elm powder

Anti fungal Treatment

- Reduce sugar and carbohydrates
- Olive leaf Extract
- Garlic
- Caprylic acid
- Pau Darco

Anti fungal drug Treatment

- Nystatin: need doses up to 500,000IU+/day in divided doses. Slowly increase because of 'die off reaction' typically day 3. Very safe not absorbed into the body.
- Fluconazole, Itraconazole & Ketoconazole, systemically absorbed can cause liver toxicity needs blood test to monitor
- Saccharomyces Boulardii: (Yeast) safe no side effects often very effective.

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Antibiotic treatment

- Vancomycin: powerful, not absorbed kills anaerobes clostridia. Short lived results during antibiotic treatment.
- Flagyl (Metronidazole) anaerobic infections
- Ciproxin active against resistant gram negative organisms

Secretin

- Gut neurotransmitter
- Triggered by acid secretion in the duodenum
- Excretion of pancreatic enzymes
- Bicarbonate
- Receptors found in the brain

Secretin

- Intravenously Most effective effects last 3-4 weeks Improved bowels, calmer more focused. After 8 rounds no further benefits
- Transdermal limited benefit
- Intra nasal ? Benefit

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.

MT dysfunction & Autism

- Pfeiffer Treatment centre in Illinois
- 2000 study of 500 autistic children
- 99% chemical imbalances consistent with MT dysfunction.
- Abnormal copper to zinc ratios
- Normal is 1.1
- Autistic group 1.6

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MT functions

- Regulation of copper and zinc levels in the blood
- Detoxification of mercury and other heavy metals
- Development and functioning of the immune system
- Development and pruning of neurons
- Prevention of yeast overgrowth in the intestines.
- Production of enzymes which break down gluten and caesin

MT functions

- Taste and texture discrimination in tongue epithelia
- Hippocampus function & behaviour
- Development of emotional memory and socialization

Why MT dysfunction?

- Genetic predisposition for weak MT function
- Vaccines? MMR? Children with MT dysfunction more susceptible to vaccine reactions
- Heavy metals?
- Antibiotics (reduce Hg excretion by 10 fold)

Treatment of Metallothionien

- Phase 1
- Zinc 50mg daily
- Manganese 7.5mg
- Magnesium 22mg
- Pyridoxine 50mg
- 5-P-5 (Vit B 6 active form) 50mg
- Vit E 100 IU

Treatment of Metallothionien

- Phase 2
- After 3 months of intense zinc loading
- MTPromoter: Slowly introduced
- Amino acids:
- Glutathione, Selenium, serine, lysine, alanine, glycine, Threonine, Proline, aspartic acid, asparagine, glutamic acid, Methionine, Glutamine, Isoleucine, Valine

Kyptopyrroluria

- Abnormal pyrroles in the urine
- Schizophrenics 40-70%
- Down syndrome 70%
- Autism 50%
- ADHD 30%
- Alcoholics 20-80%

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Clinical Symptoms

- Nail spots
- Pale skin
- Poor tanning
- Pain in the Knees & joints
- Constipation
- Light, smell, touch & sound hypersensitivity

Symptoms

- Low stress tolerance
- Anxious, overly pessimistic
- Explosive anger
- Emotionally labile
- Social withdrawal
- Migraines
- Stitch in the side

Diagnosis

- Clinical
- Mauve Urine test
- Very light and heat sensitive
- Needs to be collected under low light conditions and transported frozen to the lab
- Response to zinc and Vit B 6

Treatment

- Pyridoxine-5- Phosphate 50mg
- Pyridoxine 250mg
- Zinc 50mg
- Response can be dramatic within days
- Calmer, fewer meltdowns, better focus

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.

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Sources of Mercury

- Dental amalgams
- Fish: especially shark, tuna and swordfish
- Vaccines: added as a preservative thiomersal (mainly removed from vaccines in the last 2-3 years)
- Environment: coal fired power stations
- Mercury thermometers

Lead Toxicity

- Known neurotoxin
- No 'safe limit'
- Reduces IQ
- 90% is in the bones.
- Sources:
 - Lead paint: banned in 1970 but still in old houses
 - Busy roads: Less risk now because leaded petrol is now replaced

Treatment of Heavy metal toxicity

- Avoidance of exposure
- Reduce ongoing exposure
- Supplements, Glutathione, selenium, Vitamin C, herbal liver support, detoxify programs
- Clathrating agents & Chlorella
uncertain benefit

Treatment of Heavy metal toxicity

- DMSA orally/suppositories given in fortnightly intervals. Good for mercury & lead (10mg/kg TDS three days on & 11 days off)
- EDTA intravenously and suppositories (lead chelation)
- DMPS: Intravenously, suppositories, transdermal

Heavy Metal testing

- Blood tests: good for acute toxicity and ongoing exposure
- Hair test gives a longer over view
- Random Urine tests
- Provocation urine test with chelation agent eg DMSA or EDTA (the most accurate)

Oxidative stress Model of autism

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

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- Timing of stress:
- In utero: eg Hg poisoning: autism evident at birth: mental retardation often present
- After birth Regressive autism
- After 2 years: speech delay

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 lipoic acid
- Risperdal

Oxytocin

- 2006 Mt Sinai Medical school treated autism 15 patients intravenously
- Increased facial recognition
- Intranasal Oxytocin spray
- Released during breast feeding
- Increases bonding, trust and love

D-Cylcoserine treatment

- Antibiotic used in the treatment of tuberculous
- Augments the effects of behavioural treatment in Obsessive compulsive Disorder
- NMDA receptor (glutamate) agonist
- Pilot study 2004 increased social responsiveness and decreased social withdrawal in 40% of subjects.

Summary

Treat autism as a physical illness
Identify physical problems
Work through each area stepwise
Diet caesin & gluten free ? Other foods
Leaky Gut treatment & repair
Metallothionein treatment
Heavy metal toxicity

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

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Further reading and resources

- 'Children with Starving Brains' Dr Jaquelyn McCandless
- 'Metallothionein and Autism' Second edition-2002, Pfeiffer Treatment Center, Naperville Illinois, www.hriptc.org
- Defeat Autism Now (DAN) conferences (audio & DVD)