THE FRONTLINE

a voice for children whose cry goes unheard

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AUTISTIC SPECTRUM DISORDER

Family Challenge

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Autistic Spectrum Disorder

SOCIAL SKILLS

- ***Limited fear/understanding of danger***
- ***Isolation: Appear consumed by own world, with little interest in others*** ***(unless joined)***
- ***Difficulty executing simple instructions (limited response to human voices, although may respond to other sounds)***
- ***Minimal eye contact/smiling with others***
- ***Speech abnormalities & delays***
- ***Act like children much younger than age***

Autistic Spectrum Disorder

BEHAVIOUR

- *Repetitive behavior such as rocking or hand flapping (motor tics may also be present)*
- *Abnormal response to people & events*
- *Self-injurious behavior*
- *Difficulty coping with 'routine' changes*
- *Emotionally volatile or overly passive (occurs in absence of apparent triggers)*
- *Overly attached to certain objects/topics (may interact with toys in unusual ways, but with limited range of play, rarely engages pretend play)*
- *Up to 20% experience seizures*

Autistic Spectrum Disorder

SENSORY EXPERIENCES

- *Strong reaction to certain sounds*
- *Fail to look at objects directly*
- *Insensitivity to pain or temp extremes*
- *Eat restricted range of food types*
- *Frequently walk on tip toes*
- *Drawn to watching certain patterns or feeling certain textures*

Asperger's Syndrome

CHARACTERISED/DIFFERENTIATED:

- *Socialisation problems*
- *Cognitively normal or high IQ*
- *Presence of restricted, repetitive and obessional behaviors & interests*
- *Communication difficulties: pedantic, overly articulate, & literal speech*
- *No developmental delays in language but communication issues may arise*
- *Motor coordination difficulties*

Antecedents & Possible Contributing Factors

ASD likely caused by an interplay of genes & environmental factors

Where do we start?

Genetic underpinnings

Abnormal Intestinal Permeability

Malabsorption & Maldigestion

Microbial Overgrowth

Imbalanced Opioid & Free Sulphate

Yeast/Gluten/Casein/Celiac Disease

Environmental factors

(Heavy Metal & Chemical Toxicity, Antibiotics, Vaccines?)

Bio- & Neuro-chemical imbalances

Immune system abnormalities

Brain-wave Imbalance

Vaccines

Fanatical anti-vaccine stance
(overstating case – valid points become unbelievable)

versus

Orthodox medical literature
(exhibit lack of willingness to accept any problems could exist that consideration is devalued)

Vaccine Controversy

– *Claim ASD symptoms are compounded by, or immerge around time of vaccination*

– *Historical Debates: Vaccine combinations versus multiple vaccinations in early years (international observations)*

– *Mercury Toxicity, Aluminium Salts, Animal body part residue (Polio), Preservatives, Antibiotics (e.g. Neomycin, Formaldehyde)*

– *Regression often accompanies symptom onset at same age vaccines given. Cannot discount vaccine timing & ASD symptom onset is coincidence rather than cause*

– *Adequate research (epidemiological & direct study of individual cases) yet to clearly inform*

ASD Linked to Measles???

S. Walker, K. Hepner, J. Segal, A. Krigsman
Wake Forest University School of Medicine

Medical & clinical data collected for 275 regressive-ASD children with chronic GI symptoms.

85% found positive for the F gene amplicon (confirmatory DNA sequence for measles virus in the terminal ileum)

Supports an association between measles virus & ileocolitis /LNH (confirms previous research)

trans-IAG (Indolylacryloylglycine)

- *trans-IAG is found in the urine of an estimated 75% of ASD children*
- *Speculated to be a detoxified derivative of a parent acid (can impact the permeability of many membranes throughout the body)*
- *Permeability to peptides relevant for the membranes lining the gut & the blood-brain-barrier (the Gut is leaking)*
- *Increased permeability of either or both of these membranes would result in greatly increased levels of opioid peptides reaching the CNS*

Opioid Excess Theories

- **Chemical substance with morphine-like action:** **Both number & volume of opioid particles in ASD appear elevated** (including Desmorphin: only found in ASD & on back of poison dart frogs - fungus)
- **Excessive Opioids (& opioid-like substances) impact hormones & hormonal regulation - thought to trigger ASD symptoms**
- **The only known enzyme to break down opioids (DDP-IV) appears to be absent or reduced in ASD children (DPP-IV is postulated to either absent via a genetic mechanism or enzyme inactivated through autoimmune mechanisms)**
- **ASD symptoms from birth - thought to produce no DPP-IV; Regressive ASD - inactivated DPP-IV (eg. acquired auto-immunity)**

- In the absence of DPP-IV, proteins like Gluten & Casein produce excessive Opioid compounds like dermorpine (hallucinogen)
- ASD children often unable to metabolize gluten: A-gliadin is produced which the body cannot metabolize (A-gliadin binds to opiod receptors C & D. These receptors are associated with mood & behavior disturbances)
- Abnormal opioid peptides found in ASD children are known to trigger other gut disorders, especially hollow organ dysmotility syndromes (pain arising from uncoordinated electrical activity & peristalsis in the gut, including the production of spasm and chronically elevated gut wall muscle tension)
- Excessive Opioids can decrease stomach acid output & T-cell proliferation

Gastro-Intestinal (GI) Tract

i) Digests foods

ii) Absorbs small food particles to be converted into energy

iii) Carries nutrients (vitamins/minerals) attached to carrier proteins across the gut lining into the bloodstream

iv) Contains a major part of the chemical detoxification system of the body

v) Contains immunoglobulins or antibodies that act as the first line of defence against infection

Gastrointestinal Problems Prevalent in ASD

- Disruption of the gut flora promotes pathogenic microorganism overgrowth
- Gut flora of ASD children = higher incidence of Clostridium histolyticum bacteria group - clusters I & II
  (ASD children found to have 9 species of Clostridium not found in other children – [LO-ASD] high levels of non-spore-forming anaerobes & microaerophilic bacteria)
- C.H.(I&II) are recognized toxin-producers – contribute towards gut dysfunction

Leaky Gut Syndrome (LGS)

- LGS represents a hyper-permeable intestinal lining (spaces develop between the cells of the gut wall, and bacteria, toxins and food leak through)
- An inflamed or damaged gut lining disrupts entire system functioning
- Cell spaces allow large food antigens to be absorbed into the body - normally only tiny food antigens. Larger antigens are foreign to body's defence system
- Production of antibodies now attack once harmless, innocuous foods:
- **WHAT ARE THE CONSEQUENCES?**

LGS Implications

- Mineral / vitamin deficiency & allergies
- Detoxification pathways that line the gut are compromised = chemical sensitivity
- Toxin leakage overburdens liver (body less able to handle everyday chemicals)
- Inflamed gut lining causes protective coating of immunoglobulin-A to be adversely affected (body no longer able to ward off protozoa, bacteria, viruses)
- Bacteria & yeasts now able to trans-locate from gut into bloodstream & set up infection anywhere else in the body
- Looks similar to antigens on our own tissues. Antibodies form & attack tissue

Gut & Psychology

- Digestion & absorption of food is essential for mental & physical health
- Compromised gut flora, leads to digestion & food absorption & nutritional deficiency
- Commonly seen in children with learning disabilities/psychiatric problems/allergies
- Malnourished? Testing reveals typical deficiencies in important minerals, vitamins, essential fats, & amino-acids
- Typical deficiencies in:

  magnesium, zinc, sulphur, selenium, copper, calcium, manganese, phosphorus, iron, potassium, vanadium, boron, vitamins B1, B2, B3, B6, B12, C, A, D, folic acid, pantothenic acid, omega-3, 6, 9 fatty acids, taurine, alpha-ketoglutaric acid, glutathione & many other amino-acids

Antibiotics & Yeast

- ASD children exhibit increased levels of **arabinose & pentosidine** (protein-sugars thought to alter neuronal function - linked with Psychosis & CD) & extremely high values of tartaric acid
- The only source of tartaric acid is yeast. Many reports have suggested that the onset of autism may be related to the occurrence of otitis media
- It is common to treat MEI with some sort of broad-spectrum antibiotic. Intestinal overgrowth of yeast and certain anaerobic bacteria commonly follows BS-antibiotic use

Antibiotics & Yeast

- **WHY not everyone?** ASD children may have genetic deficiency (myeloperoxidase) that impairs the action of white blood cells on yeast cells. Infusions of gamma globulin observed to correspond with ASD symptom remission (Gupta *et al*, 1996)
- Nystatin (antifungal drug) administered over 2 months – found to reduce urinary tartaric acid to zero (improving eye contact, hyperactivity & sleep patterns)
- Improvements may be due to decreased arabinose & pentosidine formation (fewer random neural connections & increased neural connections oriented to the child's environment)

Free Sulfate

- ASD Children - low levels of Free Sulfate
- Opioids change sodium, bicarbonate, & chloride reabsorption in the kidney
- Foods with high phenolic (acid) content observed to exacerbate symptoms (VC) **(overtaxing the body's available sulphur resources)**
- Anecdotal reports abound on the adverse effects of apples, oranges and other citrus fruits, chocolate, and other phenolic foods on behavior in ASD children
- An inadequately functioning sulphur-transferase system affects metabolism of some neurotransmitters **(Serotonin metabolism will be affected, & the appearance of unusual metabolites such as hallucinogens)**

Traditional & Non-Traditional Treatment Options

Detoxification

(Epsom Salts, Heavy Metals, GI Cleansing)

Supplements

(Vitamins & Minerals, Digestive Enzymes, Chelation, Methylcobalamin - MB12, Essential Fatty Acids, Cod Liver Oil & Urecholine)

Dietary Intervention

(Gluten Free & Casein Free Diet, Specific Carbohydrate Diet, Low Oxalate Diet, Feingold Diet)

Clinical & Neuro-Psychology Innovations

(Social-Behavioural Therapy, EEG Neurotherapy, HEG Blood flow Training)

Detoxification: Heavy Metals

Elemental Hair Test & Urinary Porphyrin Profile: used to assess for 'Disordered Mineral Transport' and give the probability of Mercury toxicity.

Nutritional supplements including vitamins, minerals, antioxidants and a gut flora maintenance program recommended to be in place to support heavy metal detoxification

Chelation (pronounced KEY-LAY-SHUN) can be taken orally or transdermally as a lotion or cream. Chelators are substances that bind to heavy metals.

Periodic testing is required, including blood tests to ensure safety & assess mineral status.

Chelation is not a swift treatment, this is chronic rather than acute toxicity. Two years worth steady, safe removal of toxic heavy metals is generally considered to be the minimum

Detoxification: Epsom Salts

Epsom Salts absorption provides Magnesium & Sulphate to help support detoxification systems

Reported to improve sleep patters, bowel movements, & hyperactivity.

Detoxification: GI Cleansing

Yeast, bad bacteria & parasites, produce toxic by-products (yeast ferment) as part of their life cycle. These toxins can effect behaviour, stools, appetite, sleep patterns, a myriad of ASD related problems.

Good flora to produce vitamins & enzymes can be achieved through diet manipulation (limiting sugar & other problematic foods/drinks); use of probiotics (either in food or supplement form), & using natural &/or prescription anti-fungal, anti-bacterial & anti-parasitic preparations

****GI cleansing is often accompanied by a period of worsening behaviours & symptoms. This is the result of bad bacteria dying off and producing toxins in the process. Effects may be minimised by beginning treatment very slowly or using oral Activated Charcoal (acts like a magnet and carries the toxins out in the stool before they can be absorbed into the bloodstream).***

Supplements

Vitamins & Minerals

Vitamin & mineral supplements address nutritonal deficiences from picky eating & damaged gut. Specialised testing guides

Digestive Enzymes

Enzymes dosed according to the amount & type of food eaten (rather than age). Digestive enzymes ensure foods are properly broken down & that nutrients are released & available to the body. Plant based enzymes most commonly used for children

Methylcobalamin - MB12

Vitamin B12 support the 'Methlylation Cycle‘ (end product of raising levels of Glutathione). Gluathione is the substance the body uses to detoxify itself - shown to be consistently low in ASD children. May not only be deficiency, but also 'dependency'. In this case the ASD body requires a slow, steady and on-going delivery of the MB12. Not very well absorbed orally (butt injections).

Essential Fatty Acids

Great care must be taken when selecting products (Mercury/PCB's contamination can be an issue)

Dietary Intervention

Gluten Free & Casein Free Diet: ***Improved bowel habit, appetite and weight regulation, improved behaviours, sleep patterns, eye contact, speech and sensory issues.***

Specific Carbohydrate Diet ***is a strict grain-free, lactose-free, & sucrose-free dietary regimen. Carbohydrates have the greatest influence on intestinal microbes (yeast & bacteria) involved in intestinal disorders. Most intestinal microbes require carbohydrates for energy. Starvation! SCD corrects malabsorption, allowing nutrients to enter the bloodstream & be made available to the cells of the body, strengthening immune system***

****ASD children may go through a stage of worsening behaviours when going through food 'withdrawal'***

Dietary Intervention

The Feingold Program ***eliminates several groups of synthetic food additives and temporarily removes a group of foods referred to as "natural salicylates." This group includes aspirin, several common fruits & vegetables. The Program also eliminates the synthetic sweetener aspartame (NutraSweet, Equal). Improvements seen in behaviour, learning & health.***

Low Oxalate Diet: ***Removal of foods high in Oxalates & limiting lower Oxalate's. Oxalates belong to a group of molecules called organic acids & find their way to tissues that are damaged - form crystals causing further oxidative damage & discomfort. Some bacteria use oxalates for fuel, but other fungi and bacteria may themselves generate more oxalates as a response to metals like zinc, copper, and cadmium.***

Psychological Interventions

Social-Behavioural Therapy & Skills Training

–Enhancing Social Interaction

–Recognising Views/Feelings of Others

–Avoiding Emotional Breakdown

–Peer Awareness

–93% Stress Free Classrooms/Parenting

–EEG Neurotherapy