



FACING UP TO leaky gut syndrome

The observations I have made along with the results obtained from tests on autistic children place gut related disorders high on the list of abnormalities found. The usual signs are:

- abnormal levels of bad to good bacteria;
- parasites;
- poor digestion and absorption of proteins;
- essential fatty acids;
- minerals, vitamins and trace elements.

In general autistic children suffer from:

- leaky gut syndrome;
- abnormally high gut dysbiosis;
- altered immune function;
- increased food allergies;
- impaired enzyme activity.

Our son Billy, has had a history of gut related issues including:

- chronic diarrhea;
- food allergies;
- parasites (dientamoeba fragilis and blastostytis hominis);
- gut dysbiosis and stressed liver;
- abnormally high readings to casomorphine and glidomorphine in the urine indicating leaky gut syndrome.

The latter is a very familiar trait amongst this 'new breed'

of autistic children and should not be dismissed as it currently is by a great number of health professionals who have autistic children under their care.

It has been noted by a number of parents who correspond with me through *The Autism File* that if their autistic child has not eaten for a period of two days there are great improvements in their behaviour, eye contact, sociability and interaction along with other general improvements.

The gut is therefore a key factor within this complex jigsaw we have to, somehow, piece together. A number of leading researchers have implied that supplementation aimed at improving autistic behaviour often improves gut function. Biochemical interventions, such as digestive enzyme supplementation, Betaine Hydrochloride with pepsin, probiotics, vitamins, trace elements, minerals, amino acids and essential fatty acids can all be related to improving the gut.

There is clear research evidence of chronic inflammation of the gut in autistic children. Dr Andrew Wakefield's work and his concerns about the MMR vaccine in susceptible children is just one such piece of research. My own theory that tissue bound immune complexes and the 'complement activity' leading to chronic inflammation may be a cause of aggravated

gut tissue and the presence of multiple food allergies cannot be dismissed.

As I shall mention, antibiotics can play havoc in disturbing the natural environment of gut flora. They can affect the way the gut works and its immune system allowing the proliferation of bad bacteria, candida and other pathogens. I am also considering their role in the development of autism within Billy and the prevention of naturally enhanced immune development. Billy had five months of repetitive antibiotics between eight to 13 months. Amoxicillin was used in his last course, and he was given Cephalexin to treat respiratory tract infections and ear problems.

The feedback I have received from your health and medical questionnaires, indicate your children were also subject to numerous courses of antibiotic treatment for respiratory tract disorders and glue ear. The same pattern of chronic diarrhea and constipation was also very evident.

Leaky gut syndrome is generally associated with autoimmune disease. Reversing autoimmune disease requires healing the lining of the gastrointestinal tract.

Diseases in this category include lupus, rheumatoid arthritis, polymyalgia rheumatica, fibromyalgia, chronic fatigue syndrome, Sjogrens syndrome, vitiligo, thyroiditis, Crohn's

disease, ulcerative colitis, urticaria (hives), diabetes and Raynaud's disease.

Due to the enlarged spaces between the cells in the gut wall larger proteins are allowed to pass into the blood system. The immune system recognises them as foreign invaders like viruses and bacteria and launches an attack producing antibodies to memorise them. Human tissues have an antigenic site and autoimmunity can be triggered as a result of this and actions

following the 'complement activity'. Inflammation can occur anywhere in the body. If it occurs within the brain myalgic encephalitis may result. If it happens in the blood vessels, inflammation of the blood vessels will occur.

Inflammation in the lungs can result in asthma and swelling in the gut can lead to colitis and Crohn's disease.

Leaky gut also damages the IgA antibodies which cover the gut lining that helps fight off other

pathogenic opportunists such as candida, parasites, viruses and bacteria. With these pathogens reaping havoc they will not only impair the functioning of the gut, ie reduce digestion and absorption of nutrients, but the toxins released from these pathogens will put greater stress on the liver.

Leaky gut is therefore a problem that needs to be addressed to prevent further complications.

What causes Leaky Gut Syndrome?



Billy

- **Antibiotics** – These wipe out gut flora that provide protection against fungi and parasites but also help the body to break down complex food and synthesise vitamins like B12 and Biotin. Probiotics should be taken as soon as the course has finished in order to replace beneficial gut bacteria in the gut.
- **Nsaids** (non-steroidal anti-inflammatory drugs) like ASA, Ibuprofen and indomethacin.
- **Chemicals** in fermented and processed food (dyes and preservatives)
- **Contaminated foods** ie parasites such as blastosystis homminis, giardia lamblia and bacteria such as Klebsiella and Citrobacter.
- **Enzyme deficiencies** eg Celiac disease.
- **High refined carbohydrate diet** ie Candy bars, cookies, cakes, soft drinks, white bread.
- **Harmful bacteria** in gut.
- **Overgrowths** of yeast and fungi.
- **Food allergies**
- **Immune system** acting on gut wall (autoimmunity and 'complement activity').

Reversing Leaky Gut Syndrome

It is important however to *test for the leaky gut syndrome first*. Once this has been established then the route to healing the leaky gut can begin. It is imperative that the gut related issues are clearly looked at as I believe for Billy the functioning of his gut plays a massive role in his learning abilities, socialisation and general behaviour. He has too many of the disturbing abnormalities linked to leaky gut and abnormal gut flora to be dismissed and I was not prepared to sit back and accept that his chronic bowel habits were merely as our GP informed us as 'Toddler Diarrhea'.

Treatments like corticosteroids, antibiotics and immunosuppressive drugs may improve the condition short term but will do nothing to heal the leaky gut in the long term. To reverse the leaky gut syndrome a very comprehensive regime must be followed.

The diet must be changed to one which is as hypoallergenic as possible:

- No sugar.
- No white flour products.
- Remove all gluten and casein.
- Reduce all high fat foods, eg crisps, fries and anything fried in oil.
- No known allergenic foods.
- Use natural antibiotics, ie colloidal silver, echinacea, garlic.
- Use antiparasitics, ie cloves, wormwood, black walnut, citramesia.
- Use antifungals, ie taheebo, caprylic acid, grapefruit seed extract.
- Use probiotics, ie Primal defence, Biosa probiotics, Culturelle, Biocare probiotics formulas.
- Plus beneficial supplementation.
- Digestive enzymes.
- Aloe vera with high mps concentration.
- Stomach acidity enhancement supplements, ie Betaine HCL with pepsin, Glutamic acid, Stomach Bitters, Apple cider vinegar amino acids, ie L-Glutamine, N-Acetyl-glucosamine (NAG).
- Essential fatty acids, ie Udo's Choice, Milled Flax, Flax seed oil, Evening Primrose Oil, Borage Oil, Olive Oil, Fish Oils, Blackcurrant seed oil.
- Soluble fibre, ie Psillium seed husks and powder, apple or citrus pectin, the rice derived gamma oryzanol.
- Antioxidants, ie Carotenoids, B-Complex, Vitamin C, E, Zinc, Selenium, Germanium, Coenzyme Q10.
- Bioflavenoids, ie Quercetin, Catechin, Hesperidin, Rutin and Proanthocyanidins (pycnogenols, grape seed extract, pine bark extract, bilberry).
- Herbs and plant extracts, ie Kudzu, Chlorella and blue green algae, burdock, slippery elm, Turkish Rhubarb, sheep sorrel, licorice root, ginger root, bismuth and bentonite.

Glen Gibson, a leading gut microbiologist is examining the possible link of sulphate reducing bacteria to colitis. Foods that feed these sulphur demanding bacteria include meat and other food high in protein that release sulphur-amino acids as they are digested and sulphur additives in foods and drinks. These are sulphur dioxide, sulphites, biosulphites, metabisulphites and sulphates, known in Europe as E numbers E220 to E227. These are the additives that prolong shelf life.

Cummings, from Addenbrooke's Hospital, also suspects that other inflammatory bowel diseases such as Crohn's may be linked to sulphur reducing bacteria.

Why are sulphur levels low in autistics? Is it being rapidly utilised by sulphur reducing bacteria in the gut, before it has a chance to become systemic?

Metchnikoff popularised the idea of dysbiosis as meaning living with intestinal flora (bacteria) that has harmful affects. The more severe the dysbiosis the more harmful the effects and the poorer the functioning of the gut, the brain and the immune system. 'Intestinal dysbiosis is important as a mechanism that promotes disease in all patients with chronic gastrointestinal inflammatory, or autoimmune disorders, food allergy and intolerance, malnutrition or neuro-psychiatric symptoms'. www.scdiet.org/7archives/scd014

gut flora

The balance of normal gut flora is of great importance. There are approximately 400 species of bacteria in the human gut and the balance of natural gut bacteria is of great importance in gut, brain and immune function. Having recently received Billy's test results back from his stool analysis I had to look into this subject and do something about it. There was horrendous evidence of gut dysbiosis, impaired digestion of proteins and fats, poor absorption of minerals, vitamins and trace elements and parasites. Billy did not have consistent stool movements, and suffered bouts of constipation along with chronic diarrhea. His stools would bleach his underpants and the smell was similar to a fish tank that had not been cleaned out for two months. There was a major problem that we simply had to address. I cannot emphasise this more passionately – if your child has abnormal bowel movements then look into this as a matter of urgency.

normal gut flora

Normal flora will:

- Synthesise vitamins – biotin, niacin, folic acid, cobalmin, panthothenic acid, pyridoxine, riboflavin and Vitamin K.
- Synthesise short-chain fatty acids (SCFA), butyrate, propionate and acetate.
- Degrade toxins and Xenobiotics.
- Prevent colonisation by pathogens, ie bad bacteria, parasites, fungus and the like.
- Stimulate maturation of normal immune responses and strengthen the immune system.
- Produce certain necessary digestive enzymes.
- Assist in the elimination of ailments such as colon irritation, constipation, diarrhea and acne.
- Help digest carbohydrates and proteins.
- Produce natural anti-bacterial agents (antibiotics) which inhibit 23 known pathogens.
- Increases Calcium assimilation.
- Helps eliminate bad breath and gas.

abnormal gut flora

Adverse effects of abnormal gut flora are:

- Consume Vitamin B12.
- Produce ammonia.
- Inactivate brush border enzymes, ie DPP1V.
- Desaturate bile steroids.
- Activate pro-carcinogens and proto-carcinogens.
- Degrade dietary flavonoids.
- Stimulate dysfunctional immune responses.
- Convert amino acids to amines and phenols.
- Deconjugate bile acids and estrogens.

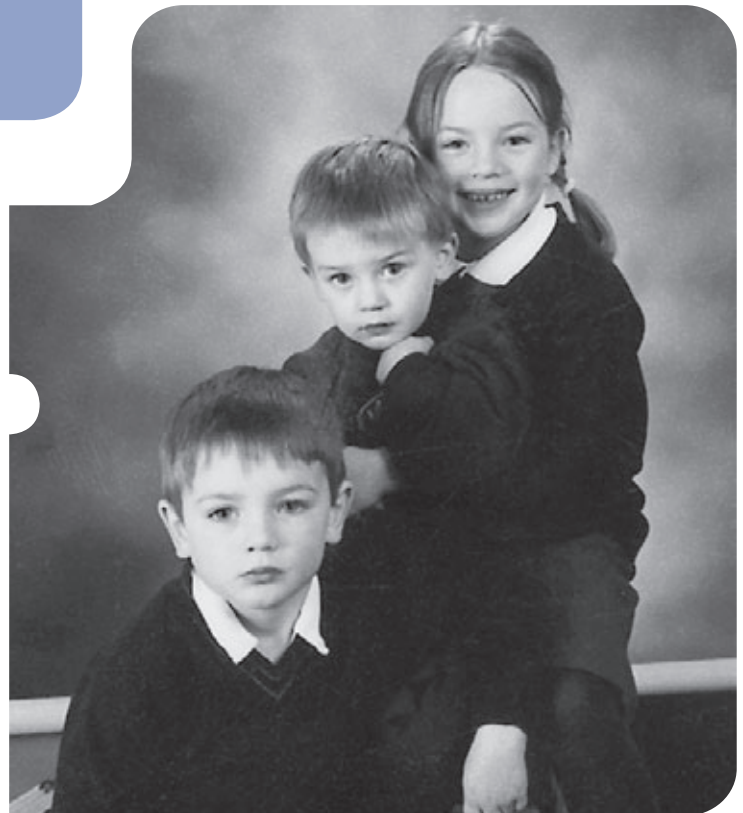
3-patterns

Based on research and published data there are three patterns of intestinal dysbiosis.

1-putrefaction

This occurs when diets are high in fat and animal flesh and low in insoluble fibre. This type of diet increases concentrations of bacteroid species and decreases bifidobacteria species. The enzymes in the bacteroides hydrolyses urea to ammonia raising pH in the stool. As I previously mentioned, Billy's stools used to be so rich in ammonia they used to bleach the colour from his underpants.

Treatment – diet high in soluble and insoluble fibre and low in saturated fat and animal protein. (Use amino acid supplementation if this is a problem.)



Billy (front) with Tobias and Bella

2 fermentation

Fermentation is caused predominantly by carbohydrate intolerance which in turn is caused by an overgrowth of endogenous bacteria in the stomach, small intestine and cecum. Some of the damage resulting from small bowel bacteria overgrowth is produced by the action of bacterial proteases which degrade pancreatic and intestinal brush border enzymes causing pancreatic insufficiency, mucosal damage and malabsorption. In more severe cases the intestinal villi are blunted and broadened.

William Shaw's work at The Great Plains Laboratory has identified the lack of DPP1V enzymes (a brush disorder enzyme) in autistic children. There is also the inability to digest proteins through insufficient enzyme release from the pancreas, eg gluten and casein (seen as casomorphine and glidomorphine). The relative success of secretin and bethanecol in stimulating pancreatic output has led to them becoming treatments which affect gut function. Evidence of mucosal inflammation and damage along with shortened villi in the Ileum has been recognised by Dr A. Wakefield *et al.*

Small bowel fermentation of sugar is a likely cause of acidosis and this is also seen in some sub-groups of autistic children. Yeast overgrowth is thought more likely to cause this fermentation problem but 20% is thought to be linked with bacteria. The symptoms include abdominal distention or bloating, carbohydrate intolerance, fatigue and impaired cognitive function. Yet again we are seeing a clear pattern of these with autistic children.

Treatment – Avoid simple sugars. Eliminate cereal grains. Carrot juice and oligosaccharides inhibit the binding of enterobacteria to the intestinal mucosa.

Probiotics, especially lacto bifidus, lactobacilli and bifidobacterium brevum.

Bacillus laterosporus may also help patients with small bowel dysbiosis.

Antimicrobials.

Herbal antibiotics – pharmacopoeia, gentiana, sanguinaria.

Citrus seed extract, bayberry leaf and artemesia annua.

3 deficiency

Antibiotics or a diet depleted of soluble fibre may create an absolute deficiency of normal faecal flora, including Bifidobacteria, Lactobacillus and E. coli.

Ulcerative Colitis or colon damage may be initiated by toxic metabolites of bile acids. Beta-glucuronidase and other hydrolytic bacterial enzymes deconjugate bile acids.

Gottschall has proposed that gut dysbiosis plays a major etiologic role in inflammatory bowel disease where small and large bowel fermentation is a key component. She uses a specific diet restricted in disaccharide sugars and devoid of cereal grains to alter gut flora. Some will undoubtedly argue that it is the elimination of food allergens that improves the situation and not the gradual alteration in gut flora.

'Altered microbial ecology in the gut may produce disease and dysfunction because of the intense metabolic activity and antigenicity of the bacteria flora. Bacterial enzymes can degrade pancreatic enzymes, damage the intestinal brush border, deconjugate and reduce bile acids and alter the milieu in numerous ways, some of which can be easily measured in a properly collected sample of stool. Bacterial antigens may elicit dysfunctional immune responses which contribute to autoimmune diseases of the bowel and of the connective tissue.' *Human Sources Press Inc.*

From this very basic script there is clear evidence that the functioning of the bowel and the balance of flora plays an integral part in the functioning of the body. It must be seen as a priority, in terms of the simple non-invasive tests that are available, to find out if your child possesses some of the problems that I have highlighted in this report. Please look at *The Autism File* web site under biometric tests for further information.