

## **SIBO – Small Intestinal Bacterial Overgrowth**

- Causes damage to the brush border/absorptive surface of the small intestine
- Maldigestion and malabsorption of many nutrients – eg B12, Vitamin D, etc
- Can result in leaky gut & area of greatest dysbiosis is most commonly the distal ileum
- Two helpful books - Elaine Gottschall, "Breaking the Vicious Cycle" and Dr Mark Pimentel, "A new IBS solution"
- Treatment is long term – 1 to 2 years and diet is crucial to the treatment

### **Large vs Small Intestine**

- Normal LI (Large Intestine) bacterial count: 10-100 billion bacteria/ml – 10 (10-11)
- Normal SI (Small Intestine) bacterial count: 100 thousand/ml – 10 (5)

### **What is the function of the small intestine?**

- Digestion and absorption of food and nutrients
- Pancreatic enzymes (Proteins into peptides & polysaccharides into disaccharides)
- Brush border (BB) enzymes - at the level of the microvilli of SI
- Amino acids and monosaccharides cross the SI brush border (BB)
- Disaccharides can't cross - need BB enzymes (lactase, sucrase, maltase, isomaltase) to be broken down into monosaccharides

### **What does SIBO do to the digestive process and intestine?**

- SIBO leads to lack of BB enzymes
- Mucous over-formation
- B12/Folic acid deficiency can lead to microvilli malformation
- Bacteria consume B12 and iron (anaemia and microvilli malformation)
- Bacteria consume Magnesium and other minerals (soap formation with bile acids)
- Destroy flavonoids (antioxidants) exacerbating damage and malabsorption
- Produce nitrosamines – linked to cancer and chronic disease

### **What is Biofilm?**

- Bacterial defence to evade immune response (created by pathogens on the wall)
- Biofilm is very difficult to penetrate and antimicrobial herbs must be used
- Associated with many chronic infections and symptoms

### **Causes of SIBO**

- Antibiotics and other drugs such as OCP, antacids
- Stress / sympathetic nerve overdrive
- Diseases such as hypothyroidism, IBD, Diabetes
- High carbohydrate diet – eg wheat breads, pasta, processed food
- Secretory IgA deficiency (an antibody of the mucous membranes)
- Inflammation conditions affecting the vagus nerve which is involved in modulating stress in the body

### **Diets**

- Specific Carbohydrate diet (SCD) – no grains, no dairy, no sugar, some fermented foods, legumes (some are OK)
- GAPS diet - Same principle as SCD only more stringent, lots of fermented foods, meat stocks – Autistic children may benefit with this strict diet

### **Notes**

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