**Case Study**

### Metabolic Assessment Profile (#101)

**Joseph’s Case**

Joseph presents for a consultation with a number of mild to moderate health complaints, including epigastric discomfort, belching and fatigue. He had seen another provider who performed a Metabolic Assessment Profile (#101) as a screening test and he brought a copy of the test results with him, which are explained below.

**Patient Complaints**

- Fatigue
- Belching
- Heartburn
- Recent weight gain in midsection
- Feels sluggish after meals
- Feels that his food does not digest well
- Mild gas and bloating
- Poor memory, brain fog

**Patient Description**

- Joseph is a 46 year old white male, 5 feet 10 inches tall, 180 lbs, BMI = 26.
- Joseph is married with three children ages 14, 11 and 5 years old. His children are very active in school and sports so this keeps him and his wife busy on the weekends. Because of his busy schedule, meals can be sporadic, rushed, and not particularly healthy. He confesses to eating a lot of fast food with lunches coming from the employee cafeteria or local fast food restaurants.
- He is a plant foreman for a large auto manufacturer. He says his job can be very stressful at times due to issues with employees and management. He likes his job but feels that there is little room for advancement for his set of skills and this serves as a source of stress for him.
- Joseph’s wife also works part-time to bring in a little extra income but mostly spends her time managing the kids’ schedules. Joseph states that she has mild GI symptoms similar to his but they seem to be more tolerable.
- His prior health concerns are unremarkable. Joseph has had the good fortune of being fairly healthy most of his life. However, in the last 3 years, he has been gaining weight, feels more fatigued and has not exercised regularly. His main sources of stress are his job, family schedule and his current health issues.

**History of Present Illness**

- Consistent belching and heartburn worsened 3 months ago; better with over-the-counter (OTC) omeprazole but has to take this medication daily. His symptoms started almost 2 years ago but was manageable with omeprazole so he did not seek medical care at that time. His symptoms have worsened over the past 3 months and his wife encouraged him to see a doctor because the omeprazole was no longer effective at eradicating his symptoms.
- Feels that his food does not digest well, feels full and hungry at the same time. Digestion feels most sluggish if he eats heavy starches, red meat and fatty foods. He tends to feel better eating fresh meals from home rather than eating out.
- Gas and bloating have been ongoing for several months and is worse with starchy foods.
- Bowel movements are regular but incomplete.
- Gradual weight gain over the past year; exercise is inconsistent, eats irregularly.
- Goes to bed late and wakes early; does not get enough sleep and sleep is often interrupted due to waking through the night.
- He will occasionally wake up due to reflux if he has eaten later in the evening then gone to bed.
- Difficulty recalling dates and names, tends to be forgetful and has trouble processing information. Brain feels sluggish. He does notice that if he gets a good night’s sleep, the brain fog is better. The brain fog and memory issues are worse when under stress and eating too much fast food.
**Medical History**
- Frequent use of OTC acid blockers for relief of symptoms associated with epigastric pain and symptoms of GERD x 2 years.
- No prior hospitalizations or surgeries.
- No medications other than omeprazole.

**Dietary History**
- Breakfast – black coffee, orange juice, pastry or muffin. Frequently skips breakfast.
- Lunch – sandwich, burgers or other fast food.
- Dinner – beef or chicken, potatoes or pasta, cooked vegetables.
- Snacks/Desserts – potato chips, granola bars, cookies, ice cream.
- Beverages – coffee, soda 1-2x/day, one liter of water daily.

**Social History**
- No smoking or drug use
- Moderate alcohol use, i.e. 4-5 beers weekly

**Physical Exam/Observations**
- Dark circles under eyes
- Difficulty recalling events
- Slightly overweight
- Mild epigastric pain upon palpation
- Normal bowel sounds in all four quadrants

**Test Results:**
- Metabolic Assessment Profile (#101) from BioHealth Laboratory
  - Indican – 2+ moderate (normal is 0) – Indicates poor protein digestion.
  - Lipid Peroxides – 12.8 nM/mg (normal range: 1.0 – 7.5 nM/mg) – indicates oxidative stress.
  - Urinary Bile Acid Sulfate – 6.0 umol/g (normal range for males: 1.0 – 8.0 umol/g – High end normal may indicate slightly sluggish liver and compromised detoxification.

**General Impressions**
Joseph's symptoms of belching, heartburn and epigastric pain are consistent with GERD. His Metabolic Assessment Profile reveals a 2+ level of indican which is a marker of poor protein digestion. An elevated indican may also suggest that he is having difficulty digesting all foods, not just protein, as evidenced by his discomfort after high carbohydrate meals. His chronic gas and bloating may be due to a combination of poor protein digestion, fermentation of carbohydrates and an inability to effectively break down and absorb fats. His digestion feels sluggish because he is not properly digesting and assimilating his food.

Given the severity and duration of his symptoms and the fact that he has worsened in the last 3 months, there is a strong suspicion of an infection with Helicobacter pylori. H. pylori is acquired through undercooked food or the saliva of someone infected with the bacteria. Joseph stated that his wife has similar, albeit milder symptoms and it is likely that if Joseph is positive for H. pylori, his wife will be too. It is important that they are both diagnosed and treated together so that they do not pass the infection back and forth.

Due to the level of stress that Joseph feels at work and the schedule he maintains with his family, he is likely experiencing a significant degree of HPA dysfunction, or maladaptation to stress. The brain fog and poor memory may be due to stress, lack of sleep and bacterial imbalances in the gut as a result of an infection, poor digestion and possible food allergies and yeast overgrowth. Poor sleep can also come as a result of low adrenal function. Energy fluctuations throughout the day may also be due to poor blood sugar control resulting from a low-quality diet and overconsumption of sugary beverages. Further assessment is warranted.

Joseph has elevated urinary lipid peroxides on his Metabolic Assessment Profile indicating oxidative stress. This is likely due to the fact that he eats a low-quality diet deficient in fruits and vegetables which are rich in antioxidants. He may also use up his small reserve of antioxidants due to stress, lack of sleep, exposure to toxins in his work environment and possible infections.

Joseph has a high normal urinary bile acid on his Metabolic Assessment Profile which may indicate a slightly sluggish liver leading to compromised detoxification capacity. A sluggish liver may be contributing to his brain fog and cognitive difficulties and poor digestion and absorption.

Joseph's weight gain is due to poor diet consisting mostly of fatty, nutrient-deficient fast foods, sugary snacks and breakfast foods and soda. Lack of sleep has been associated with the development of sugar cravings and weight gain as well.
Plan of Action

Joseph will need to do a GI Screen with H. pylori Antigen (#401H) to determine the cause of his digestive issues and reveal possible infections. He will also do an HPA Stress Profile +5 with Cortisol Awakening Response to determine the depth of his stress maladaptation, measure sex hormones and reveal any issues with night time melatonin production.

Dietary measures will be implemented to improve the overall quality and balance of his food choices throughout the day. Given his busy schedule, simple changes that do not require a lot of time will be best. Lunch and breakfast seem to be the worst meals for Joseph so making a protein shake for breakfast and making lunch from leftovers of a healthy dinner will work best into his schedule. Replacing sugary snacks and drinks with healthier alternatives will reduce blood sugar management issues and weight gain.

In order to stick with an exercise routine, it is best to get up a little earlier and exercise in the morning. Morning exercise increases the metabolic rate throughout the day allowing for increased caloric burn. There can be too many competing interests later in the day making it difficult to stick to an exercise program. Going to bed earlier will make it easier for Joseph to get up earlier and workout 4-5 days per week.

The goal for Joseph is to be able to eliminate the need for his daily use of Omeprazole. The supplement program outlined below will support his digestion, increase his antioxidant status and support his liver’s ability to detoxify. Further testing will allow us to determine the cause of his digestive issues so that he can be treated appropriately with the underlying cause of his discomfort being completely eradicated.

Additional Lab Testing

- #401H – GI Screen with H. pylori Antigen
- #205-CAR – HPA Stress Profile, Sex Hormones, Melatonin

Patient Practices

- Dietary Modifications –
  - Supplementation with digestive enzymes, liver support, and antioxidants
  - Balanced breakfast before leaving the house – smoothie with protein powder, healthy fats and fiber, low sugar fruit such as blueberries.
  - Bring lunch to work – fresh salads with protein and raw nuts or seeds, salad dressings made with olive oil. Add brown rice or sweet potatoes to increase satiety. Lunch can be leftovers from dinner the night before.
  - Dinners should include lean protein, raw and cooked veggies, brown rice or sweet potatoes. Make additional servings for lunch the next day.
  - Overall - increase vegetables and low sugar fruits, daily protein shake with fiber, reduced starches and sugars, added healthy fats in the form of raw nuts and seeds, avocado, coconut oil, flax oil, olive oil, cultured butter.
  - Eliminate sugary drinks and snacks. Increase water consumption to at least 2 liters per day. Snack on nuts and low-sugar fruit and protein drinks.
- Exercise – 30-45 minutes of focused interval training 4-5 days per week before work.
- Lifestyle – to bed by 10 pm preceded by relaxing activity of choice.