WHMC311

Session 3

Gastrointestinal & Alimentary Disease Part III

Naturopathic Medicine Department
Topic Overview

- Identify specific herbal medicines, drawing upon relevant literature, used in the support and modulation of disturbed intestinal permeability (bacterial, fungal and parasitic overgrowth), cholecystitis, cholelithiasis and pancreatitis (acute, chronic, alcoholic)

- Discussion of relevant drug interactions and potentiations.
Disturbed Intestinal Permeability
Gut Dysbiosis

- Characterised by an excessive number of bacteria in the intestines
- Nutrient malabsorption due to competition from bacteria occurs
- Symptoms
  - Chronic diarrhoea
  - Bloating
  - Abdominal pain
  - Nausea
  - Weight loss

(Rana & Bhardwaj, 2008, p.1030)
Predisposing Factors

- Achlorhydria
- Crohn’s disease
- Malnutrition
- Intestinal adhesions
- Farnesoid X receptor
- Liver cirrhosis
- Diabetes mellitus
- HIV
- Coeliac disease
- Pancreatitis
- Delayed small intestinal motility
- Old age

(Rana & Bhardwaj, 2008, p.1030)
Hypochlorhydria and Gut Dysbiosis

- Hypochlorhydria comes about in advanced age as a result of a high prevalence of atrophic gastritis, which affects as many as 10–30% of elderly persons over the age of 60 years.

- The decreased gastric acid secretion in persons with atrophic gastritis results in increased survivability of swallowed bacteria in the stomach and small intestine, which in younger, normal-chlorhydric persons would be killed by stomach acid.

  (Russell, 2000)
Treatment Considerations

- The role of the gut wall is to allow for selective absorption of nutrients while providing vital protection against intrusion into the body tissues of harmful substances from the lumen.

- Environment may predispose the mucosa to absorb bacterial and other large molecules that, in turn, provoke a local inflammatory response.

(Mills & Bone, 2013, p.186)
Treatment Considerations

- Tannins are likely to have a limited short-term effect at least in the upper reaches of the tract. In theory local anti-inflammatory activity might reduce some permeability.

- Most promising effect on intestinal permeability is likely to lie in changing biliary constituents, using hepatics and choleretics.

(Mills & Bone, 2013, p.186)
Weed, Seed, Feed

- Manipulate existing microflora to provide a healthier balance in organisms to strengthen the immune system.

- **Weed:** Broad-spectrum antimicrobials (Allium, Oregano, Berberine, 2-3 days – preferably weekend, take high doses throughout day)

- **Seed:** Appropriate microflora (use for the rest of the week)

- **Feed:** Prebiotics (*Althaea, Aloe, Ulmus*) (use for the rest of the week) Consider using Green Tea and Grape Seed extract during this time also.

(Bone, 2013, p.203)
Intestinal Flora

- In humans there is a moderately predictable sequence of colonisation after birth and through to adulthood.
- There are clear benefits of a healthy bacterial population in the gut.
- The relationship of bile products with intestinal flora is complex and works in two directions:
  - Bile salt metabolites variably stimulate growth in bacterial populations.
  - While anaerobic bacteria act on bile products to produce volatile fatty acids that control other pathogenic bacteria.

(Mills & Bone, 2013, p.186-187)
Correction of Disturbed Bowel Flora

- Correction of disturbed / damaging bowel flora remains contentious.

- There seems little value in the administration of therapeutic cultures such as lactobacillus and yoghurt in disturbances associated with disrupted gut flora.

- As herbalists we can combine the benefits of dietary changes with improved hepatic and biliary function and bitter or aromatic digestive herbs so that food matter is well prepared in the upper digestive tract.

(Mills & Bone, 2013, p.186-187)
Fructooligosaccharides (FOS)

- Fructooligosaccharides have recently been claimed to have Prebiotic properties
- They are widely distributed in plants such as
  - *Allium cepa* (Onions)
  - *Asparagus officinalis* (Asparagus)
  - *Triticum aestivum* L. (Wheat)
  - *Cynara scolymus* (Globe artichoke)
  - *Ulmus fulva* (Slippery Elm)

(Mills & Bone, 2013, p.186-187)
Cholecystitis/Cholelithiasis
Cholecystitis

- Inflammation of the gallbladder
- Most common cause is gallstones blocking the bile duct.
- May also occur in critically ill patients and decreased gallbladder emptying (Mahan & Escott-Stump, 2008, p.729).

- Acute cholecystitis
  - Is almost always associated with obstruction of the gallbladder neck or cystic duct by a gallstone. Occasionally, obstruction may be by mucous, parasitic worms or a tumour (Haslett et al, 2002, p.884)
Cholelithiasis

- “Cholelithiasis is the presence of one or more calculi (gallstones) in the gallbladder.” (Shaffer, 2007)

- Gallstones are hardened formations, composed primarily of cholesterol, that develop in the gallbladder.

- Gallstones are commonly associated with bile that contains excessive cholesterol, a deficiency of other substances in bile (bile acids and lecithin), or a combination of these factors

  (Kumar & Clark, 2005)
Clinical Features

- **Pain**
  - Right upper quadrant – Murphy’s sign
  - Epigastrium
  - Right shoulder tip or interscapular region
- It usually lasts for more than 1 hour but differentiation between biliary colic and acute cholecystitis maybe difficult
- Features suggesting cholecystitis include; severe and prolonged pain, fever and leucocytosis

(Haslett et al, 2002, p.884)
Pharmaceutical Management

- **Bile acids**: Ursodeoxycholic acid
  - Bile acid that is utilised to dissolve cholesterol derived bile stones. Only useful for small stones and requires a considerable period of time (up to two years).

- Side Effects
  - Diarrhoea is common at high doses & hepatotoxicity presents.

(Bullock, Manias & Galbraith, 2007)
Pharmaceutical Management

- **Acid Suppressors**: HMG Co-A Reductase Inhibitors (simvastatin)
  - This drug reduces the cholesterol content of bile while changing the concentration of bile salts & reducing serum cholesterol.
  - It is utilised in conjunction with Ursodeoxycholic acid to try to limit re-occurrences.

(Kumar & Clark, 2005)
Treatment Aims

- Encourage beneficial dietary and lifestyle changes
- Support optimal digestive function
- Promote optimal bile formation in the liver with choleretics
- Promote effective gallbladder motility and function with chologogues
- Reduce bile and cholesterol reabsorption in small intestine by reducing cholesterol intake, synthesis and output with

(Salmond, 2014, p.147)
Treatment Considerations

- Oxidative stress seems to be an aggravating pathological condition (Zhou et al., 2000)
- Herbal antioxidants and anti-inflammatoryatories may be of use.

BHP recommends:
- *Berberis aquifolium*
- *Dioscorea villosa*
- *Taraxacum officinale*

(BHMA, 1983)
Treatment Considerations

- Bitter herbs to improve digestion and gall bladder function
  - *Artemisia absinthium*
  - *Gentiana luteum*
  - *Picrorrhiza kurroa*
  - *Andrographis paniculata*

  (Mills & Bone, 2013, p.211-212)
Treatment Considerations

- Choleretic herbs improve bile production
  - *Chelidonium majus*
  - *Cynara scolymus*
  - *Taraxacum officinalis*
  - *Silybum marianum*

(Mills & Bone, 2013, p.211-212)
Treatment Considerations

- Cholagogue herbs improve gallbladder motility
  - *Chelidonium majus*
  - *Cynara scolymus*
  - *Mentha piperita*

- Cholagogue herbs need to be used with caution as increased motility in the early stages could lead to an increase in the number of attacks.

- Use in combination with spasmolytic herbs to minimise this risk.

(Mills & Bone, 2013, p.211-212)
Treatment Considerations

- Spasmolytic herbs can help to relieve gallbladder pain
  - *Viburnum opulus*
  - *Matricaria chamomilla*
  - *Mentha piperita*

(Mills & Bone, 2013, p.211-212)
Treatment Considerations

- During an acute attack, food restriction should be practiced

- After the attack the patient should consume a low fat diet for a period, with 30-45g fat per day

- In chronic cases, a long term low fat diet should be followed. Fat should constitute 25-30% of the total daily calories

  (Mahan & Escott-Stump, 2008, p.729)
Precautions

- Long term use of steroidal saponin herbs best avoided as these herbs can increase cholesterol levels in bile.
  - *Dioscorea villosa* (Wild Yam)
  - *Smilax officinale* (Sarsaparilla)

- Olive oil and lemon juice gall bladder flushes are best avoided, as the risk of a gall stone getting caught in the pancreas and causing acute and life threatening pancreatitis is too great.

(Mills & Bone, 2013, p.211-212)
Drug-Herb Interactions

HMG-CoA Reductase Inhibitors

*Allium sativum*

- Co-administration may theoretically reduce the required dosage of statin drug for condition stabilisation. Garlic presents with cholesterol lowering effects.

*Hypericum perforatum*

- St John’s wort induces hepatic clearance of this drug through CYP3A4. Concurrent usage may lead to reduced drug levels.

(Stargrove et al. 2008)
Drug-Herb Interactions

HMG-CoA Reductase Inhibitors

*Ilex paraguayensis* (Yerba mate)

- Consumption of 330ml of infusions made with 16.5g green and 6.6g roasted mate 3 times daily for 40 days significantly enhanced the reduction of LDL-cholesterol by statins by 10% after 20 days and by 13.1% after 40 days in 30 subjects.

(Brinker 2010, p.241)
Drug-Herb Interactions

HMG-CoA Reductase Inhibitors

*Coptis chinensis*
- May have additive effect, in vitro results showed increase in LDL receptor mRNA expression (Brinker 2010, p.114)

*Theobroma cacao* (Cocoa seeds)
- May potentially complement (Brinker 2010, p.241)
Pancreatitis
Pancreatitis

- Acute pancreatitis is an acute inflammatory condition of the pancreas.
- Most common causes (90%): Gallstones, alcohol, autoimmune, idiopathic
- Chronic pancreatitis is a slow, silent process that gradually destroys the pancreas and is most often caused by excessive alcohol consumption (80%).
- Diabetes mellitus occurs in advanced cases because the islets of Langerhans are involved (Haslett et al 2002, p.802)
Clinical Presentation

Acute
- Abdominal pain – acute onset with persistent, severe, epigastric pain often radiating to the back
- Serum lipase or amylase elevated more than three times upper limit of normal is common

Chronic
- Midepigastric postprandial pain radiates to back, relieved by sitting upright to leaning forward
- Steatorrhoea, malabsorption, vitamin deficiencies (A, D, E, K, B12), diabetes, weight loss or obstructive jaundice may be present

(Salmond, 2014, p.147)
Pharmaceutical Management

Pain relief
 o Opioid analgesics (pethidine, tramadol)
  • These are utilised for acute flare-ups
  • In chronic maintenance a combination of opioid analgesics and NSAIDs are utilised
  • Tricyclic Anti-depressants (amitriptyline)
  • Can be utilised to minimise analgesic drug use & manage pain (Kumar & Clark, 2005)

Antibiotics
 o Antibiotics can be prescribed if there is necrosis present or as a prophylaxis

(Gardiner & Berk, 2010)
Pharmaceutical Management

- **Pancreatic enzymes**: Pancreatin, Pancrelipase
  - Used to aid with digestion and minimise pancreatic enzyme output which can minimise pain
  - Side effects
    - Can cause irritation and gastritis if not enteric coated

- **H2-receptor antagonists**
  - These may be used in conjunction with pancreatic enzymes to minimise the effects of extra acid production.

(Bullock, Manias & Galbraith, 2007; Kumar & Clark, 2005)
Treatment Considerations

- Supportive only.
- Consider:
  - Anti-oxidants herbs such as *Vitis Vinifera, Panax ginseng*
  - Anti-inflammatory herbs – *Bupleurum falcatum, Glycyrrhiza glabra, Taraxacum officinale, Paeonia lactifolia*
  - Analgesic herbs (pain relief where possible)

- Specific herbs:
  - *Hippocastani cortex* (Blumenthal et al 1998, p.393)
Vitis vinifera

- This was followed up on by Banerjee & Bagchi (2001:203) who reported on three patients with chronic pancreatitis who were treated with grape seed extract at a dose of 100 mg 2–3 times per day.

- Treatment with narcotic analgesics and pancreatic enzyme supplements had failed to control symptoms.
Drug-Herb Interactions

Opioid Analgesics

*Piper methysticum* (Kava kava)
- Concurrent usage may have an additive effect with codeine and morphine. Potential for CNS depression, monitor.

Tricyclic Antidepressants

*Albizia lebbeck, Hypericum perforatum*
- Potential for serotonin syndrome to present

*Andrographis paniculata, Silybum marianum*
Concurrent usage may reduce TCA induced liver dysfunction

(Braun & Cohen, 2010)
Drug-Herb Interactions

Antibiotics

*Taraxacum officinale*

- Reduces absorption of quinolone antibiotics. Separate dose by 2 hours. (Braun & Cohen, 2010)

*Gelidium spp. Thallus* (agarweed) and *Plantago psyllium*

- Soluble fiber may inhibit absorption of oral antibiotic (Brinker 2010, p.33, 270)

*Cyamopsus terragonolobus* seeds (guar gum)

- Slower GI emptying and viscosity of gum may inhibit oral absorption (Brinker 2010, p.194)
Drug-Herb Interactions

Antibiotics

Berberis vulgaris, Coptis chinensis, Hydrastis canadensis, Mahonia spp. (Oregon grape)

- Aqueous solution of berberine reduced bacterial resistance of three strains of enteric bacteria to penicillin and 13 strains to chloromycetin which had previously been unaffected by the antibiotics in vitro (Brinker, 2010, p.56)
Drug-Herb Interactions

H2-Receptor Antagonists

*Hypericum perforatum*

- Can induce CYP 3A4 clearance of this drug, reducing drug effectiveness. (Braun & Cohen, 2010)
Readings for next session

- **Reading 1**: “Probiotics” Braun, L Cohen, M *Herbs and Natural Supplements: An evidence based guide*


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