BEYOND SIMPLE GASTRO

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CASE PRESENTATION

A 2 day old female infant presents with profuse watery diarrhoea.

Investigations:

Na 130mmol/l

K 3.5mmol/l

Faecal osmolar gap 120

Stool MCS - negative

INVESTIGATIONS

FAECAL OSMOLAR GAP

Serum osmolarity – 2x(Sodium + Potassium faecal conc)

<50 mosmo/l = secretory diarrhoea

50-100 mosmo/l = could be either

>100 mosmo/l = osmotic diarrhoea

Need a liquid stool

FAECAL REDUCING SUBSTANCES

Positive = osmotic diarrhoea

DIFFERENTIAL DIAGNOSIS

* Congenital enteropathy
* Cow's/soya milk protein allergy
* Cystic Fibrosis
* Lactose intolerance
* Congenital chloride diarrhoea
* Congenital sodium diarrhoea

CONGENITAL ENTEROPATHY

* Diarrhoea shortly after birth
* TPN dependant

* Congenital microvillus inclusion disease
* Congenital tuft enteropathy
* Treatment – life long TPN or small bowel transplant

COW'S MILK PROTEIN ALLERGY

* No gold standard investigation
* Eliminate cow's milk from the diet
* A 2 week trial of amino acid base formula
* If symptoms resolve, re-introduce cow's milk
* If symptoms recur = Cow's milk protein allergy

CYSTIC FIBROSIS

* Most common autosomal recessive genetic disorder
* Incidence
* Presents with bulky, smelly frequent stools
* Severe failure to thrive or severe protein energy malnutrition with oedema
* Stool for free fat
* Faecal elastase - <15ug/g- <200ug/g
* Gold standard – Sweat test – Cl >60

CONGENITAL CHLORIDE DIARRHOEA

* Primary defect in the active transport of Cl/HCO3 in the distal ileum and colon
* Onset is intrauterine, leading to watery diarrhoea and polyhydramnios.
* There is no passage of meconium due to watery, 'urine like' diarrhoea.
* Watery diarrhoea may be easily confused with urine.
* Hypochloraemia, hyponatraemia, hypokalaemia and metabolic alkalosis

CONGENITAL CHLORIDE DIARRHOEA

* CLD is then confirmed by faecal electrolytes.
* A faecal chloride concentration exceeding the sum of the sodium and potassium concentrations suggests the diagnosis of CLD.
* CLD must be considered in the differential diagnosis in children with a tendency to chronic dehydration, failure to thrive, slow growth, and hypokalaemic and hypochloraemic metabolic alkalosis.

CONGENITAL SODIUM DIARRHOEA

* The diagnosis based on
  - daily faecal sodium excretion between 98 and 190 mmol/L
  - hyponatremia,
  - metabolic acidosis
  - low-to-normal urinary sodium concentrations

CONGENITAL SODIUM DIARRHOEA

* Inborn defect of intestinal sodium/proton exchange
* Severe diarrhoea with voluminous alkaline stools
* Contains high concentrations of sodium and resulting in hyponatremia and metabolic acidosis.
* Management is with total parenteral nutrition

LACTOSE INTOLERANCE

* Primary is rare
* Most cases secondary post-enteritis
* Diagnosis- reducing substances positive in the stool
* Eliminate lactose

COELIAC DISEASE

* Symptoms start on introduction of gluten
* Loose stools, abdominal bloating, severe microcytic anaemia, oedema and failure to thrive
* High anti-tissue transglutaminase, anti-endomysial antibodies
* Gold standard- villous atrophy on duodenal biopsy
* Eliminate gluten from the diet

TODDLER‘S DIARRHOEA

* Presents with loose stools with undigested food visible
* Not dehydrating
* No failure to thrive
* Might be aggravated by large volumes of fruit juice
* No treatment needed, reassure

IRRITABLE BOWEL SYNDROME

* Older child
* Stools range from loose to hard
* Associated with abdominal pain
* Relieved by stooling
* No failure to thrive
* Can attempt dietary changes
* Symptomatic relief

INFLAMMATORY BOWEL DISEASE

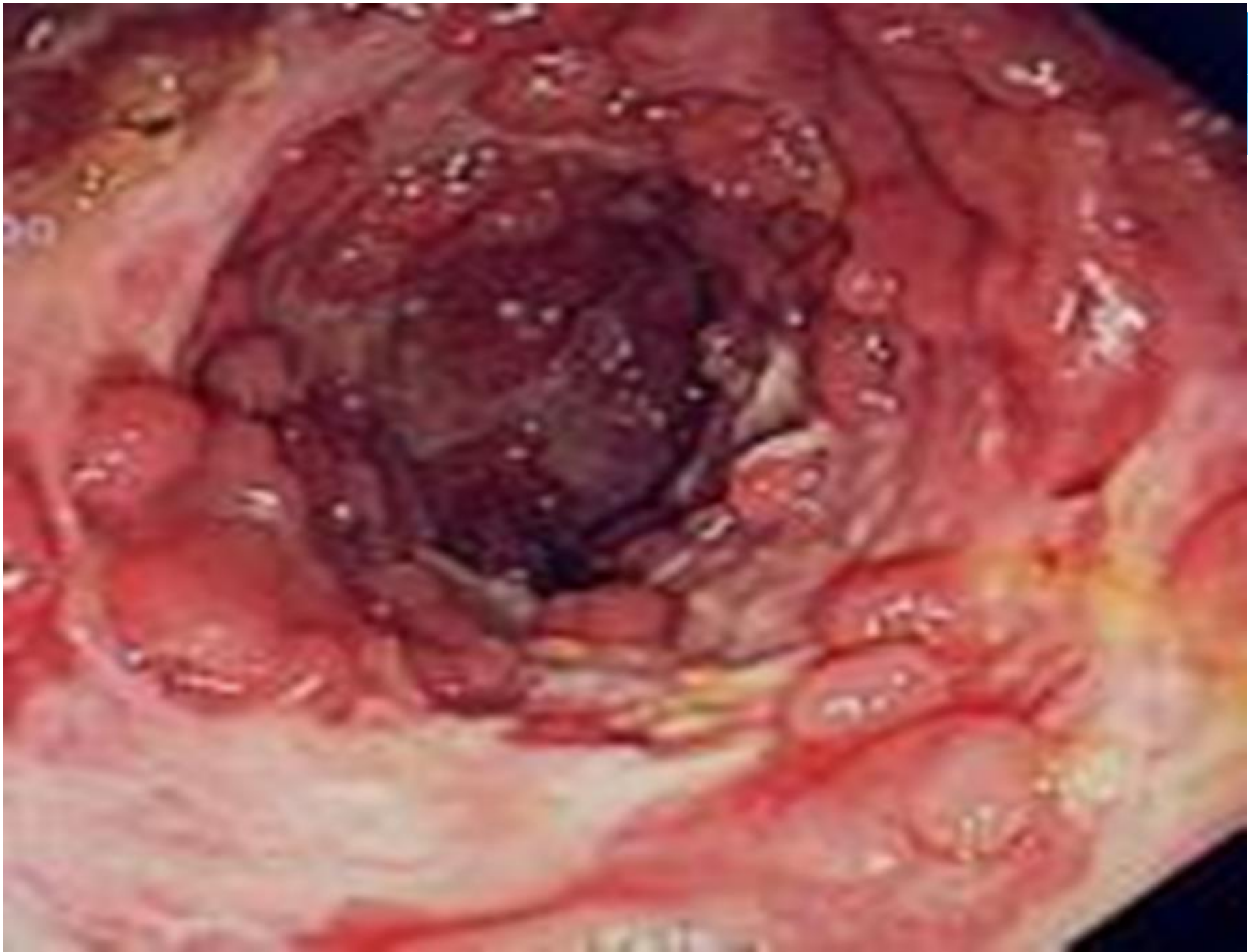
* Mucoid bloody stools
* Recurrent abdominal pain
* Loss of weight
* Painless anal fissures
* Mouth ulcers
* Fever

INFLAMMATORY BOWEL DISEASE

* Faecal calprotectin
* By product of neutrophil breakdown on the mucosal surface
* A marker of intestinal inflammation
* Level of 200ug/g significant
* Screening for colonoscopy

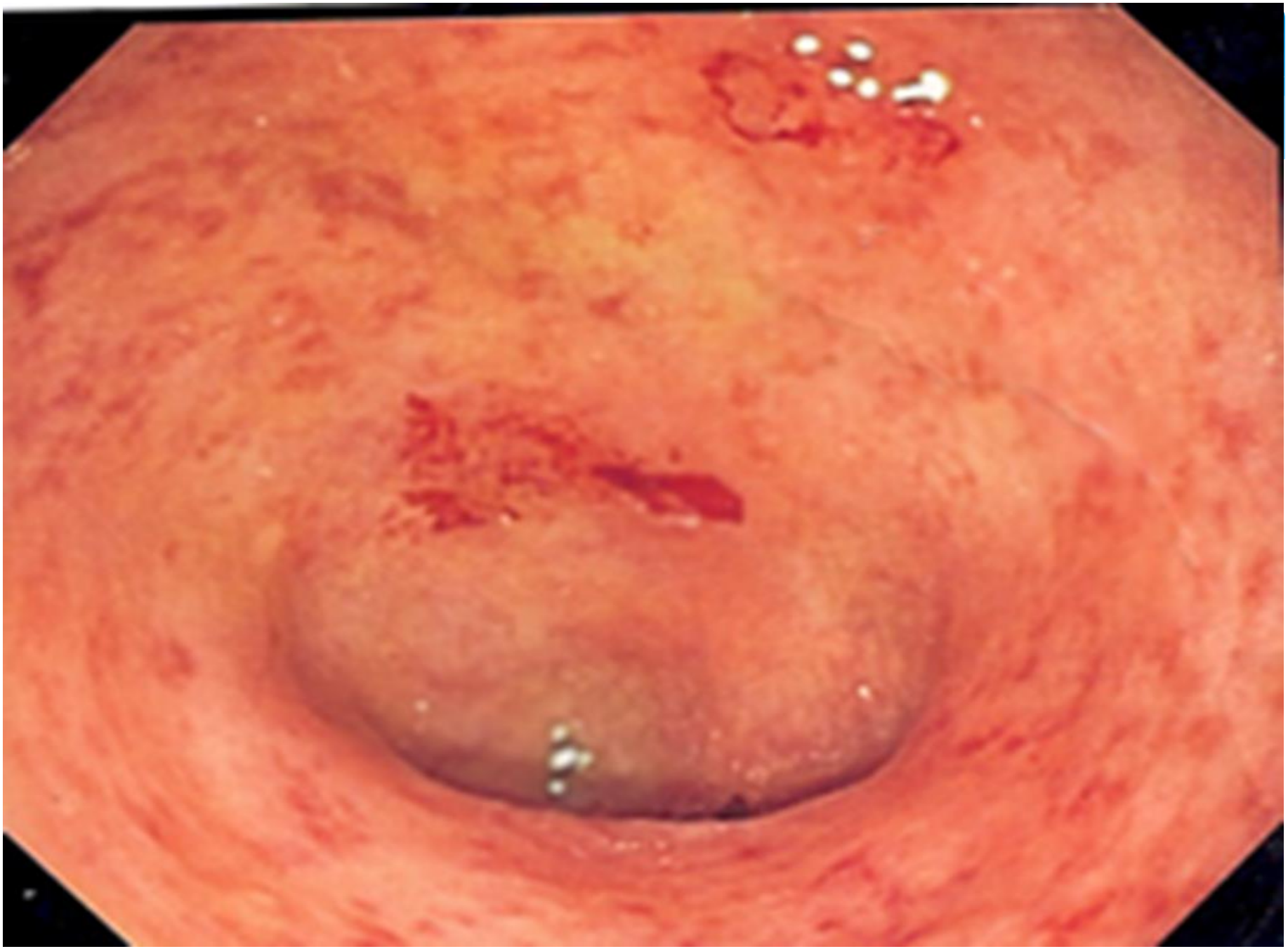
CROHN'S DISEASE

* Affects mouth to anus
* Causes strictures and fistulae
* Mostly affects the terminal ileum
* 30% small bowel involvement, 30% colon only involvement, 40% small and colon
* Mild disease – Enteral nutrition
* Moderate to severe disease – Steroids, azathioprine or monoclonal antibodies



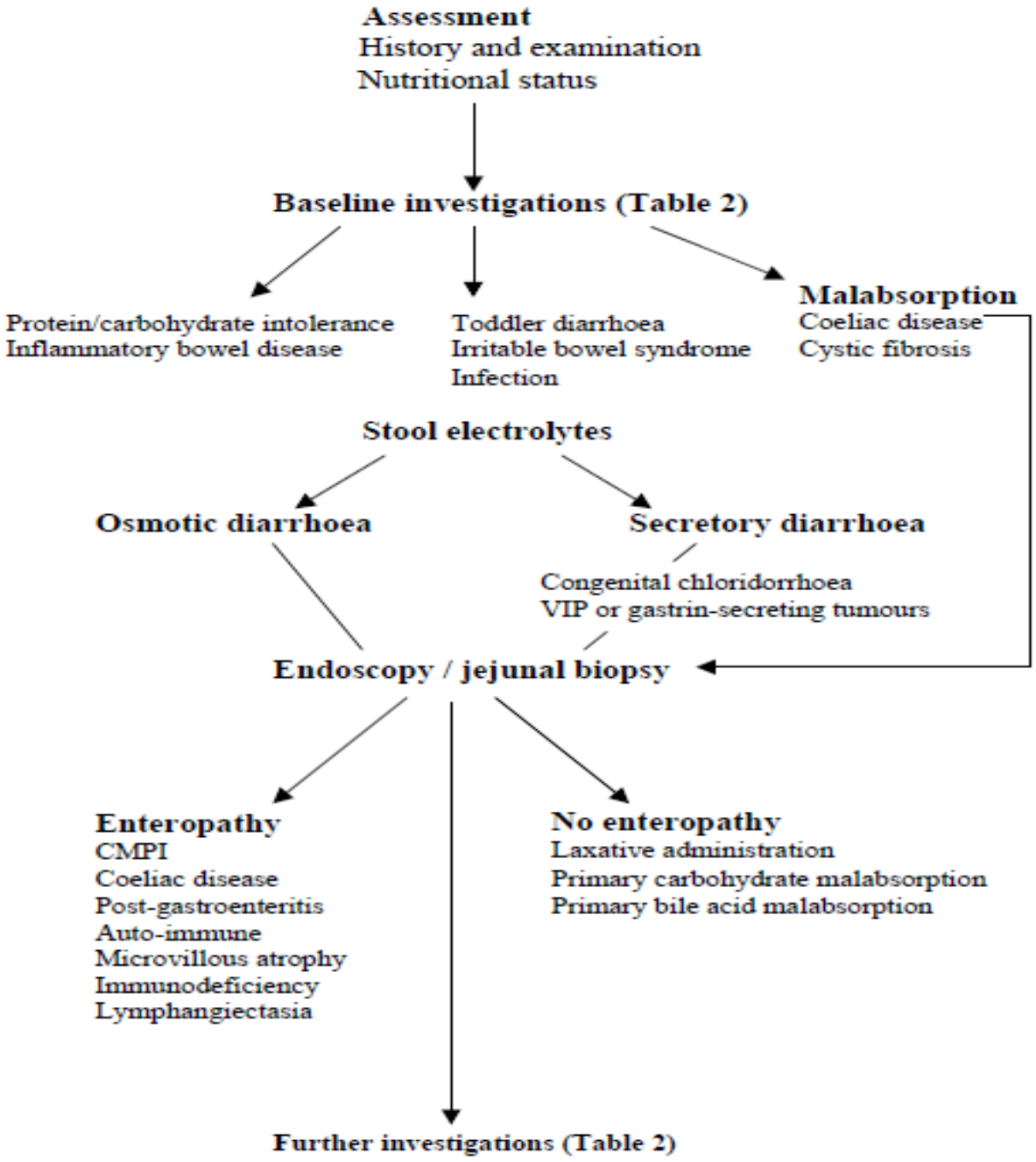
ULCERATIVE COLITIS

* Onset is adolescence to early adulthood
* Affects the colon
* Can have a backwash ileitis
* Can present with aphthous mouth ulcers
* Aetiology is poorly understood
* Treatment steroids, azathioprine and monoclonal antibodies



TB ENTERITIS

* Can mimic IBD
* Affects terminal ileum
* Need tissue to improve diagnostic yield
* Need to exclude in endemic area
* Needs 4 drug TB treatment


Assessment
History and examination
Nutritional status
Baseline investigations (Table 2)
Protein/carbohydrate intolerance
Inflammatory bowel disease
Toddler diarrhoea
Irritable bowel syndrome
Infection
Malabsorption
Coeliac disease
Cystic fibrosis
Stool electrolytes
Osmotic diarrhoea
Secretory diarrhoea
Congenital chloridorrhoea
VIP or gastrin-secreting tumours
Endoscopy / jejunal biopsy
Enteropathy
CMPI
Coeliac disease
Post-gastroenteritis
Auto-immune
Microvillous atrophy
Immunodeficiency
Lymphangiectasia
No enteropathy
Laxative administration
Primary carbohydrate malabsorption
Primary bile acid malabsorption
Further investigations (Table 2)

BASELINE INVESTIGATIONS

Baseline investigations

- Urine microscopy and culture
- Stool: Virology and microbiology
  Ova cyst and parasites (× 3 fresh samples)
  Fat globules and chymotrypsin
  Reducing substances
  Electrolytes
  Consider occult blood (× 3, on white diet)
- Full blood count, film and differential, ESR
- Urea and electrolytes, calcium, phosphate, C-reactive protein
- Liver function tests and plasma proteins
- Ferritin

FURTHER INVESTIGATIONS

If possible malabsorption:

- Vitamins B12, A, E and folate
- Clotting screen
- IgA and IgG antigliadin antibodies, anti-endomysial antibodies and/or tissue trans-glutaminase.
- Sweat test
- Hydrogen breath test

Further investigations

- Upper gastrointestinal endoscopy / colonoscopy
- Rectal biopsy
- Abdominal ultrasound
- Barium meal and follow-through
- Technetium-labelled white cell scan
- Abdominal MRI

THANK YOU