Recurrent giardiasis

Recurrent giardiasis is not uncommon – one third of infected patients may develop recurrent or chronic symptoms.
When assessing a patient with on-going symptoms following confirmed *G. lamblia* infection, consider whether it could be:

a) post-infectious sequelae,
b) reinfection, or
c) resistance to treatment.

a) Post-infectious sequelae:

Lactose intolerance: may last >1 month: the primary site of *G. lamblia* infection is the small intestine, resulting in villous atrophy, brush border loss, loss of disaccharidase enzymes, and hence the development of temporary lactose intolerance.
Consider counselling the patient on a lactose-free diet for one or more months after treatment, particularly if there are predominantly irritable bowel-like symptoms, and repeat stool testing is negative for *G. lamblia*.

b) Reinfection:

Reinfection is common; likely due to the low infectious dose of only 10 cysts required to cause disease, the high volume of excretion of cysts from infected individuals (1-10 billion cysts/day), most infected individuals are asymptomatic, and the environmental hardiness of the cysts (lasting months).

Risk factors for and prevention of reinfection include:

- Attention to exquisite personal hygiene including hand washing with soap and water (**not** hand-gel). High risk activities include handling diapers of infected children, cleaning up animal faeces, gardening, etc.
- Avoid drinking contaminated water – consider a contaminated independent water supply that may need testing.
- Avoid swimming in contaminated water: pools, lakes, rivers, ponds, Jacuzzis, etc. Do not return to communal swimming venues until asymptomatic for >2-weeks post-treatment.
- Avoid eating contaminated foods without washing and/or cooking. Potentially faecally contaminated foods include: spinach, lettuce, herbs, strawberries, potatoes, carrots, oysters, mussels, organic foods grown in infected manure, etc.
- Consider potential sexual exposure, especially in men who have sex with men.
- Contact with animals with diarrhoea is an exposure risk; consider seeking veterinarian opinion regarding treatment.
- Check history of **immunosuppression**: HIV (low threshold for testing), hypogammaglobulinaemia, X-linked agammaglobulinaemia, IgA deficiency, etc.

c) Resistance to Treatment:

Treatment-refractory cases of giardiasis are increasing and likely due to nitroimidazole resistance. India and Africa are the commonest sources of treatment-refractory cases, at 69.9% and 12.3%

respectively, compared with only 2.7% of European cases being treatment-refractory[3]. Resistance cannot be detected in the routine microbiology laboratory, and should be determined clinically.

What to do if you suspect recurrent giardia:

1. **Submit a repeat stool sample** to confirm reinfection (and exclude infection with an alternative pathogen – see **Differential Diagnosis** below**)**

2. **Screen household contacts, and treat** positives, even if they are asymptomatic.

3. If repeat stools are positive: re-treat according to **Table 1**; if negative: consider lactose intolerance **(section (a) below)**

4. Expect resolution of symptoms over 3-5 days. Repeat stool sampling is not indicated unless symptoms fail to settle or return.

5. If re-treatment fails, re-test and:

    a. **re-evaluate risk factors for re-exposure (section (b) below) including immunosuppression**
    b. consider the potential for resistance to the nitroimidazoles (i.e. metronidazole / tinidazole) **(section (c) below)**
    c. consider other treatment options in **Table 2** – d/w micro first.

For complicated cases, contact the on-call **medical microbiologist** on
01392 402962 or
email: **rde-tr.MicroConsultants@nhs.net**

References:

1. Munoz FM. Treatment and prevention of giardiasis. *UpToDate* 2015 accessed at: https://www.uptodate.com/contents/treatment-and-prevention-of-giardiasis?source=search_result&search=giardia&selectedTitle=1~99 [May 2016]
2. Gardner TB and Hill DR. Treatment of giardiasis. *Clin Microbiol Rev*. 2001; **14(1)**: 114-128.
3. Nabarro LEB, Lever RA, Armstrong M and Chiodini PL. Increased incidence of nitroimidazole-refractory giardiasis at the Hospital for Tropical Diseases, London: 2008-2013. *Clin Microbiol Infect* 2015; **21**: 791-796.

Differential Diagnosis of Giardiasis:	
Infectious *Parasites* *Entamoeba histolytica* Cryptosporidiosis *Bacteria* *Vibrio cholerae* *Clostridium difficile* *Shigella* spp. *Escherichia coli* *Viruses* Rotavirus Norovirus Astrovirus	**Non-infectious** *Drug-induced* *Lactose intolerance* *Tropical sprue* *Crohn's ileitis* *Irritable bowel syndrome*

Table 1 – treatment options

Treatment options	Efficacy
Metronidazole 400mg, orally, TDS for 5 days	75-100%[1]
High dose metronidazole 2g, orally, once daily for 3 days	93-100%[2]
Long course metronidazole 500mg, orally, twice daily for 10 days	60-95%[2]
Tinidazole 2g, orally, single dose	>90%[2]

Table 2 – 2nd line treatment options

2nd line Treatment options	Efficacy
Nitazoxanide 500mg, orally, twice daily for 3 days	81-85%[1]
Tinidazole, 2g, orally, STAT, followed by **Albendazole,** 400mg, orally, twice daily for 7 days, followed by **Tinidazole,** 2g, orally, STAT.	*Regimen used at LSHTM – no efficacy data*

- Second-line treatments are available via hospital pharmacy only, and should be discussed with on-call medical microbiologist – of particular use if nitroimidazole resistance is suspected (ie infection contracted in Indian Subcontinent)
- Other agents: mebendazole, paromomycin, quinacrine, furazolidone, chloroquine, etc.