

## 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 (details below):

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

### **Action 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.

## Differential Diagnosis of Giardiasis:

Infectious	Non-infectious
<i>Parasites</i>	<i>Drug-induced</i>
<i>Entamoeba histolytica</i>	<i>Lactose intolerance</i>
Cryptosporidiosis	<i>Tropical sprue</i>
<i>Bacteria</i>	<i>Crohn's ileitis</i>
<i>Vibrio cholerae</i>	<i>Irritable bowel syndrome</i>
<i>Clostridium difficile</i>	
<i>Shigella</i> spp.	
<i>Escherichia coli</i>	
<i>Viruses</i>	
Rotavirus	
Norovirus	
Astrovirus	

**Table 1 – treatment options**

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

**Table 2 – 2<sup>nd</sup> line treatment options**

2 <sup>nd</sup> line Treatment options	Efficacy
<b>Nitazoxanide</b> 500mg, orally, twice daily for 3 days	81-85% <sup>1</sup>
<b>Albendazole</b> 400mg, orally, once daily AND <b>metronidazole</b> 250mg, orally, three times per day for 5 days	79% <sup>1</sup>
<b>Mebendazole:</b> 200mg, orally, three times per day for 5 days	80% <sup>1</sup>
<b>Paromomycin:</b> 10mg/kg, orally, three times per day for 5-10 days	55-90% <sup>1</sup>

- Other agents: quinacrine, furazolidone, chloroquine, etc.

### **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<sup>3</sup>. Resistance cannot be detected in the routine microbiology laboratory, and should be determined clinically.

For complicated cases, contact the on-call **medical microbiologist** on

**01392 402962** or

email: [rde-tr.MicroConsultants@nhs.net](mailto: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](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.