



INTESTINAL PARASITES 2006-2008

No. 5, 2009

This report comprises intestinal parasites diagnosed at the Parasitology Laboratory, DMBP, Statens Serum Institut in the 2006-2008 period. The report includes infections acquired in Denmark and abroad.

Microscopy

Parasites were observed considerably more frequently in patients examined in standard parasitology tests and in connection with travel-associated diarrhoea (10-13%) than in cases of persisting diarrhoea (7-8%), [Table 1](#). It is, however, unlikely that the occurrence of parasites should be less frequent in cases of persisting diarrhoea than in other groups of gastrointestinal symptoms. It is possible that patients with prolonged gastrointestinal problems may carry *Dientamoeba fragilis* or *Blastocystis sp.* more frequently. These are only partially detected, if at all, by microscopy of faecal concentrates.

PCR for intestinal protozoa

Since 2007 the Parasitology Laboratory has offered PCR detection of *Giardia duodenalis* and *Crypto-*

sporidium sp., *Entamoeba histolytica*, *E. dispar* and *Dientamoeba fragilis*. Depending on category, as many as 40% of the samples tested positive with PCR, [Table 2](#), while only about 10% of the samples tested by microscopy of faecal concentrates were positive for non-pathogenic and pathogenic parasites, [Table 1](#). The proportion of positive samples for each of the individual analysis modalities were substantially higher than for the standard protozoa package, which is presumably used primarily for screening purposes, [Table 2](#).

Test category selection may influence results, for instance order no. 075 is used for differentiation between *Entamoeba* species detected by microscopy and order no. 074 is to some extent used to assess the treatment effect of *D. fragilis*.

Individual analyses & worm infections

The individual worms were detected either macro- or microscopically or by culture, e.g. *Ascaris* and *Taenia*. PCR analysis led to the detection of two cases of the less pathogenic

Table 2. Samples testes by PCR and positives in %, 2007-2008

Parasite	Samples tested		%	
	07	08	07	08
<i>Cryptospor. sp.</i>	77	339	1	1
<i>Dientamoeba frag.</i>	120	865	36	40
<i>Entamoeba dispar</i>	19	151	32	9
<i>Entamoeba hist.</i>	19	151	16	3
<i>Giardia duodenalis</i>	77	339	5	3
Protozoa package:	431	2616	29	29
- <i>Cryptospor. sp.</i>	431	2616	0	<1
- <i>Dientam. fragilis</i>	431	2616	25	25
- <i>Entamoeba disp.</i>	431	2616	2	2
- <i>Entamoeba hist.</i>	431	2616	0	<1
- <i>Giardia duoden.</i>	431	2616	2	2
Total	647	3971	28	28

Taenia saginata, but such findings remain rare. The number of detected pinworm infections (*Enterobius vermicularis*) however had a weak increasing trend, [Table 3](#).

Table 3. Individual analyses by culture or microscopy, and positives in %, 2006-2008

Parasite	Samples tested			Percent positive		
	06	07	08	06	07	08
<i>Blastocystis sp.</i>	0	91	706	0	23	16
<i>Cryptosporidium sp.</i>	49	32	14	12	13	14
<i>Enterobius vermicularis</i>	328	323	394	19	21	23
<i>Microsporidium sp.</i>	38	41	25	5	0	0
<i>Strongyl. stercoralis</i>	6	7	1	33	0	0

Generally, the occurrence of intestinal worms in Denmark is considered low in comparison with the occurrence of unicellular intestinal parasites.

Commentary

No substantial change was seen in the occurrence of parasites in comparison with previous years, EPI-NEWS 4/06. Unicellular intestinal parasites such as *Blastocystis sp.* and *Dientamoeba fragilis* are underdiagnosed by microscopy of faecal concentrates. The occurrence of these two parasites in Denmark is surprisingly high compared with other parasites. It remains unclear how and to which extent these parasites cause disease, but the occurrence of *D. fragilis* in cases with gastrointestinal symptoms is considerably higher than in the background population. (R. Stensvold, H.V. Nielsen, Parasitology Laboratory, DBMP, SSI)

28 January 2009

Table 1. Parasite positive stool samples tested by stool concentrate microscopy, 2006-2008. Non-pathogenic/pathogenicity unknown: *

Parasit	Standard parasitology test			Persisting diarrhoea examination			Travel-associated diarrhoea examination		
	2006	2007	2008	2006	2007	2008	2006	2007	2008
<i>Ascaris sp.</i>	1	2	10	0	2	1	1	0	0
<i>Blastocystis sp.*</i>	236	215	173	110	104	89	182	232	189
<i>Chilomastix mesnili*</i>	0	11	4	0	3	1	6	5	6
<i>Cyclospora cayetanensis</i>	1	1	0	1	0	0	0	0	8
<i>Cryptosporidium sp.</i>	2	19	5	31	18	10	69	27	41
<i>Dientamoeba fragilis</i>	0	0	0	0	0	0	0	0	0
<i>Diphyllobothrium latum</i>	0	1	0	0	0	0	0	0	0
<i>Endolimax nana*</i>	66	49	49	14	15	20	19	49	56
<i>Entamoeba coli*</i>	179	134	148	58	57	76	78	102	126
<i>Entamoeba hist./dispar*</i>	30	26	44	10	13	6	26	18	20
<i>Entamoeba hartmanni*</i>	47	22	22	5	7	7	20	23	30
<i>Enterobius vermicularis</i>	6	5	2	5	0	0	0	0	0
<i>Fasciola hepatica</i>	0	1	1	0	0	0	0	0	0
<i>Giardia duodenalis</i>	110	66	77	65	57	44	84	64	54
Hook worm	3	4	3	0	0	0	2	0	0
<i>Hymenolepis nana</i>	3	2	6	0	3	0	0	1	0
<i>Iodamoeba bütschlii*</i>	17	19	19	5	4	4	0	9	4
<i>Isospora belli</i>	0	0	1	0	0	0	0	0	0
<i>Microsporidium sp.</i>	0	0	0	0	0	0	0	0	0
<i>Opisthorchis/Clonorchis</i>	3	0	1	0	0	0	0	0	0
<i>Schistosoma sp.</i>	1	0	2	0	0	0	0	0	0
<i>Strongyloides stercoralis</i>	3	0	1	0	0	0	0	0	0
<i>Taenia sp.</i>	8	2	5	0	0	0	0	0	0
<i>Trichuris trichiura</i>	5	7	4	2	2	0	0	0	2
Charcot Leyden crystals	359	287	321	316	230	315	215	188	252
Erythrocytes/leukocytes	79	60	66	31	14	12	18	26	25
Samples tested, total	5286	4328	5043	3678	3157	3661	2981	4074	4242
Parasite-pos, percentage	11.0	10.4	9.5	7.0	8.2	6.8	13.4	11.3	11.1

Individually notifiable diseases

Number of notifications received in the Department of Epidemiology, SSI (2009 figures are preliminary)

Table 1	Week 4 2009	Cum. 2009 ¹⁾	Cum. 2008 ¹⁾
AIDS	0	1	5
Anthrax	0	0	0
Botulism	0	0	0
Cholera	0	0	0
Creutzfeldt-Jakob	0	13	1
Diphtheria	0	0	0
Food-borne diseases	5	25	17
of these, infected abroad	1	5	4
Gonorrhoea	15	42	19
Haemorrhagic fever	0	0	0
Hepatitis A	0	0	5
of these, infected abroad	0	0	2
Hepatitis B (acute)	0	1	0
Hepatitis B (chronic)	2	3	12
Hepatitis C (acute)	1	1	0
Hepatitis C (chronic)	10	17	22
HIV	0	19	20
Legionella pneumonia	2	9	10
of these, infected abroad	0	1	7
Leprosy	0	0	0
Leptospirosis	0	0	0
Measles	0	2	1
Meningococcal disease	0	2	7
of these, group B	0	1	3
of these, group C	0	0	1
of these, unspec. + other	0	1	3
Mumps	0	0	1
Neuroborreliosis	0	0	8
Ornithosis	0	0	1
Pertussis (children < 2 years)	1	6	9
Plague	0	0	0
Polio	0	0	0
Purulent meningitis			
Haemophilus influenzae	0	1	0
Listeria monocytogenes	0	0	0
Streptococcus pneumoniae	0	1	8
Other aethiology	0	0	8
Unknown aethiology	0	0	5
Under registration	6	16	-
Rabies	0	0	0
Rubella (congenital)	0	0	0
Rubella (during pregnancy)	0	0	0
Shigellosis	1	8	7
of these, infected abroad	1	8	6
Syphilis	3	11	9
Tetanus	0	0	0
Tuberculosis	5	26	25
Typhoid/paratyphoid fever	3	3	1
of these, infected abroad	0	0	1
Typhus exanthematicus	0	0	0
VTEC/HUS	2	4	10
of these, infected abroad	1	1	1

¹⁾ Cumulative number 2009 and in corresponding period 2008

Selected laboratory diagnosed infections

Number of specimens, isolates, and/or notifications received in SSI laboratories

Table 2	Week 4 2009	Cum. 2009 ²⁾	Cum. 2008 ²⁾
Bordetella pertussis (all ages)	2	11	10
Gonococci	11	34	25
of these, females	4	7	2
of these, males	7	27	23
Listeria monocytogenes	2	6	1
Mycoplasma pneumoniae			
Resp. specimens ³⁾	3	10	14
Serum specimens ⁴⁾	-	-	16
Streptococci ⁵⁾			
Group A streptococci	7	24	16
Group B streptococci	1	6	8
Group C streptococci	3	4	1
Group G streptococci	1	9	15
S. pneumoniae	18	156	144
Table 3	Week 2 2009	Cum. 2009 ²⁾	Cum. 2008 ²⁾
MRSA	40	56	30
Pathogenic int. bacteria ⁶⁾			
Campylobacter	23	41	50
S. Enteritidis	5	8	11
S. Typhimurium	27	46	8
Other zoon. salmonella	11	20	32
Yersinia enterocolitica	1	3	4
Verocytotoxin-producing E. coli	0	1	2
Enteropathogenic E. coli	3	5	5
Enterotoxigenic E. coli	1	3	8

²⁾ Cumulative number 2009 and in corresponding period 2008

³⁾ Resp. specimens with positive PCR

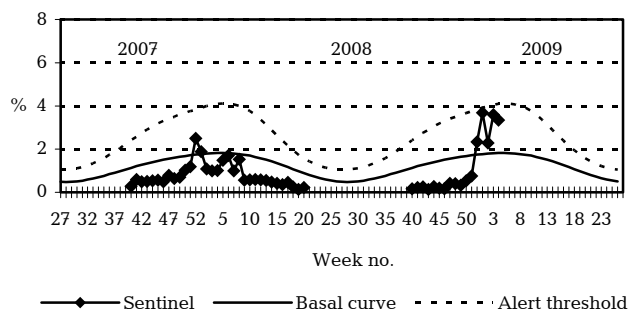
⁴⁾ Serum specimens with pos. complement fixation test

⁵⁾ Isolated in blood or spinal fluid

⁶⁾ See also www.germ.dk

Sentinel surveillance of the influenza activity

Weekly percentage of consultations, 2007/2008/2009



Sentinel: Influenza consultations (as percentage of total consultations)
 Basal curve: Expected frequency of consultations under non-epidemic conditions
 Alert threshold: Possible incipient epidemic