



## Understanding Parasites and Cancer in the United States

### Omar Amin\*

Parasitology Center, Inc. (PCI), Scottsdale, Arizona, US

**\*Corresponding Author:** Omar Amin, Parasitology Center, Inc. (PCI), Scottsdale, Arizona, US.

**Received:** March 20, 2019; **Published:** May 08, 2019

**DOI:** 10.31080/ASMI.2019.02.0227

### What we do at PCI

Diagnosis and management of:

- Parasitic organisms and agents of medical and public health importance in fecal, blood, skin, etc. specimens.
- Toxicities related to Neurocutaneous Syndrome (NCS).

Educational services: workshops, seminars, training and publications provided.

Consultations and protocols for herbal and allopathic treatments for infections and assoc. cancer.

Research: over 285 publications on parasites from all continents

**Why test? you need to be tested if you have one or more of these symptoms:**

### GI symptoms

- Diarrhea/constipation.
- Irritable bowel
- Cramps
- Gas and bloating.
- Bleeding.
- Appetite changes.
- Malabsorption.
- Mucus.
- Rectal itching.
- Gut leakage.
- Poor digestion.
- Mal-digestion and acid reflex.

### Systemic/other symptoms

- Fatigue.
- Skin rash.
- Dry cough.
- Brain fog/memory loss.
- Lymph blockage.
- Allergies.
- Nausea.
- Muscle or joint pain.
- Dermatitis.
- Headaches.
- Insomnia.
- Cancer and chronic conditions.

### How we get infected

1. **Drinking water or juice:** Giardia, Cryptosporidium.
2. **Skin contact with contaminated water:** Schistosomiasis, swimmers itch.
3. **Food (fecal-oral infections):** most protozoans, ex., Blastocystis, Entamoeba spp. and worms: Ascaris.
4. **Arthropods:** Lyme disease, plague, typhus, etc.
5. **Air:** Upper respiratory tract infections (viruses, bacteria), ex., flu, Valley fever, Hanta virus.
6. **Pets:** Hydatid cyst disease, heart worm, larva migrans (dogs), Toxoplasma (cats), Taenia (beef, swine).
7. **People (contagious diseases):** AIDS, herpes.
8. **Soil:** hook worms, thread worms.

**Examination of specimens**

- Collection kits are available from Parasitology Center, Inc. (PCI).
- We use the new Para-pak SAF (fixative) and the CONSED (stain) system.
- The fixative and stain qualities are superior to those of other tests required by US Government testing agencies, ex. FEA-Lugol's.
- We detect and identify 50-80% more species and individuals of intestinal parasites in fecal specimens than found using other standard tests.

**Seasonal prevalence of intestinal parasites in the united states during 2000**

Omar M. Amin. American Journal of Tropical Health and Hygiene 66: 799-803

One third of 5,792 fecal specimens examined from patients in 48 states were infected with 19 species of parasites in the year 2000.

- 72% of infected patients had Blastocystis hominis in single/mixed infections.
- Cyptosporidium parvum was the 2nd most prevalent parasite (13%).
- Entamoeba histolytica/dispar were 3rd in prevalence (7%).
- Up to 31% of infections with pathogenic protozoans were subclinical.
- Prevalence (22-27%) in winter but increased to 36-43% July-October.

**The relationship between parasitic and bacterial infections and cancer**

The progression of events leading to the development of cancer following parasitic or infectious processes follows these steps:

1. Heavy infections will cause host tissue damage due to parasite feeding or migration activities. Adverse metabolic byproducts of parasites act in the same manner.
2. Host tissues will attempt to compensate for damaged tissues by creating new healthy cells.
3. This process of compensation will involve considerable cell division.

4. Sometimes, the mitotic cell divisions will continue out of control and the cells keep dividing.
5. The resulting serial selection of uncontrollable cell division will cause metastasis.
6. Various types of cancer will form starting at the site of initial tissue damage from parasite action.
7. Controlling parasitic infections becomes a de facto cancer prevention.
8. This presentation will show examples of such cancerous tissues in various organs originally inflicted by heavy parasitic infections.

Herbal/natural remedies	Allopathic remedies
<i>Clear/experience/harmony</i> by Awareness Corp Protozoa, some worms	<i>Albendazole</i> Round worms, <i>Giardia</i> , Microsporidia
<i>Tricycline</i> by Allergy Research Group Protozoa	<i>Clindamycin</i> and <i>quinine</i> <i>Babesia bigemina</i> and <i>B. microti</i> , malaria
<i>Biocidin and Biotonic</i> by Biobotanical Res. Gr. Protozoa	<i>Metronidazole (flagyl)</i> or <i>iodoquinol</i> <i>Blastocystis hominis</i> , amebiasis
<i>Tanalbit</i> by Intensive Nutrition Yeast	<i>Nitazoxanide (illinia)</i> by Romark labs. <i>Cryptosporidium parvum</i> , other protozoans
<i>Freedom/Cleanse/Restore</i> by Parasitology Ctr Protozoa, worms, bacteria, fungi	<i>Mebendazole (Vermox)</i> Worms (trematodes, cestodes, round worms)
<i>Paragone I and II</i> by Renew Life Parasites and Candida	<i>Praziquantel</i> Tissue invading worms and invasive amebiasis
<i>Unikey verma-key I and II</i> by Unikey Hlth. Syst. Protozoa, worms (?)	<i>Tinidazole</i> <i>Blastocystis</i> and other protozoans
<i>Natural Cleanse I, II, III</i> by AHR, LTD, UK Protozoa, yeast, fungi	<i>Permethrin</i> or <i>Ivermectin</i> Skin ectoparasites and some worms
<i>Para-Gard</i> by Tyler Protozoa	<i>Niclosamide</i> Tissue invading worms

**Table a**

### Herbal Remedies for Parasitic Infections

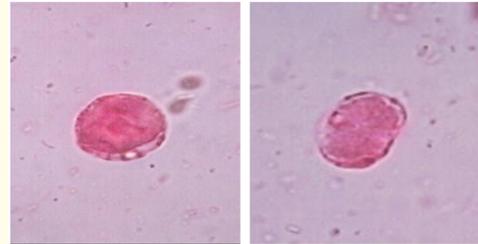
©Copyright 1998 by Omar M. Amin, MD and Karim O. Amin, B.S., USA

FOR THE COMPLETE PARASITE ARTICLE WITH LISTING

Dr. Omar Amin, MD has assembled an incredible database of information regarding parasites and the herbs that attack them. Regrettably it came to sixty pages, far too long to publish in Explore! at this time; however, this sixty page database is available free of charge to those interested. Write, phone or fax Explore

**Figure 1:** Covers all herbal remedies for parasitic infections since Ancient Egypt and China to the present by parasite and age groups.

PARASITES CAUSING CHRONIC DISEASES  
 PROTOZOA  
*BLASTOCYSTIS HOMINIS* (SPECIES COMPLEX)  
 INFECTIONS CAUSED BY FECAL-ORAL CONTAMINATION, & CAUSE TYPICAL GI AND EXTRA-INTESTINAL SYMPTOMS INCLUDING SKIN ABNORMALITIES.



**Figure 4**

NOW AVAILABLE

New anti-parasitic herbal formulas of natural botanical blends for restoring balanced digestive functions from PARASITOLGY CENTER, INC. (PCI)



FREEDOM, CLEANSE, RESTORE

The new product includes 3 formulations, \* to be taken together. It is especially designed by world renowned parasitologist Dr. Omar M. Amin for the treatment of parasites and restoration of balanced digestive functions. The formulas are based on Dr. Amin's research and experience that covers known remedies from the Ancient Egyptians and Ancient Chinese to date, and that have been published in refereed journals. For instance, see Amin, O. M. and Amin, K. O. 1998. Herbal Remedies for Parasitic Infections. Explore 8 (6): 1-59 and Amin, O. M. 2003. Ancient Egyptian Medicine. Explore 13 (5): 7-15 (reprints or PDF files available from PCI).

A good botanical remedy for the restoration of optimal digestive health is one that accomplishes 3 things: (1) defends the body from parasitic infections causing intestinal imbalance, (2) cleanses the colon from toxins and promotes regularity, and (3) supports the integrity of damaged tissues. The 3 PCI formulas enclosed in this package accomplish those three functions, in the same order:

**Figure 2**

**Freedom** includes Oregano leaf, Clove flower, Black walnut husk, Peppermint leaf, Black cumin seed, winter melon seed, Gentian root, wormwood bark, Hyssop leaf, Cramp bark, Thyme leaf, Fennel seed, Pumpkin seed, Berberine, Caprylic acid, China berry, Rosemary, Aloe Vera, Betel nut palm, Papaya, Citrus extract, Pomegranate, Rangoon creeper, Tansy. Take 2 capsules each morning with water on an empty stomach. See label for more details.

**Cleanse** includes Psyllium seed husk, Atlantic kelp, Corn silk, Polygonum, Chinese rhubarb, Peppermint leaves, Black cumin seed, Cinnamon bark, Ginger root, Orange peel, Cloves, Cascara, Slippery elm. Take 2 capsules in the evening with water before going to bed. See label for more details.

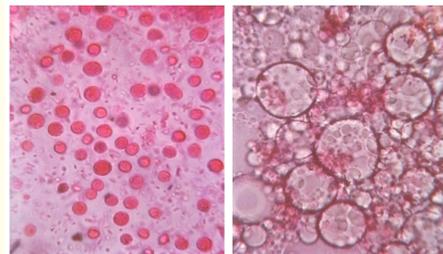
**Restore** includes Molasses, Carob fruit, Rhubarb root, Thyme leaf, Ginger root, Clove flower, Cayenne fruit, Rosemary leaf, Alfalfa oil, Licorice root, German chamomile, Grapefruit seed extract, Echinacea, Atlantic kelp, Chicory, Corn silk, Fennel seed, Peppermint leaf, Sal flower. Take 2 capsules once a day between meals. See label for more details.

**Precautions:** Read labels carefully for more details on dosage, restrictions of usage, tamper evidence, drug interactions (not to be taken with antibiotics), and indications. The product may be taken for two months or longer in difficult, severe or recurrent cases or cases of long standing without interruption. Retesting in two weeks or longer after end of treatment, if needed.

\* Especially manufactured for Parasitology Center (PCI), Scottsdale, Arizona by NHK, a California contract manufacturing and packaging company and analytical microbiology laboratory that is FDA CGMP compliant, NPA & NSF GMP certified, ISO 9001:2008 Registered, CCOF & QAI Organic Certified, and ISA Halal Certified. For questions, call PCI at 480-767-2522 or fax at 480-767-5855.

**Figure 3**

*BLASTOCYSTIS HOMINIS*  
 A CASE OF HEAVY INFECTION WITH MANY SPECIMENS (LEFT) ALSO SHOWING EXTREME LEVELS OF MUCUS BUILD UP (RIGHT) IN A CANCER CASE.



**Figure 5**

### Cryptosporidium parvum

An under-diagnosed water-borne infection common throughout the us

- Best known for the 1993 Milwaukee epidemic infecting 400,000 cases, 4000 hospitalized and over 100 deaths.
- Detected in 27% of drinking water samples in households supplied by 66 surface water treatment plants in 14 states.
- Our prevalence rate (13%) is higher than the 0.6-4.3% reported from North America and 2-4% from Europe.
- Runoff water from hillsides where cattle graze infect water reservoirs.
- Typical GI and systemic symptoms causing tissue damage.

### Cyclospora cayatanensis

- Cyclospora is very similar to Cryptosporidium morphologically but twice as large (7-12 um).
- Infections are associated with contaminated berries, fruits and vegetables from S. America.

- Endemicity and water borne transmission in the US was established by Amin [1]; see below when we predicted recent outbreaks in 2018.



Figure 6

**ENTAMOEBIA HISTOLYTICA/DISPAR**  
THE PATHOGENIC (MONTEZUMA'S REVENGE)/NON-PATHOGENIC AMOEBAS; THE THIRD MOST COMMON PROTOZOAN (7%) IN THE US.



Figure 7

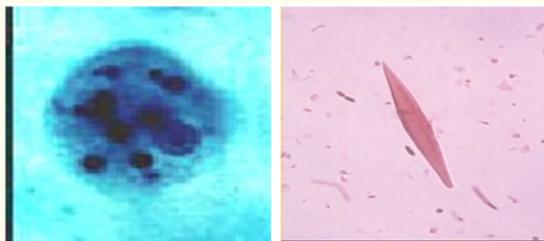


Figure 8

**ENTAMOEBIA COLI**  
PREVIOUSLY CONSIDERED NON-PATHOGENIC BUT DOES CAUSE PATHOLOGY (CLASSICAL GI, DERMATOLOGICAL & OTHER SYSTEMIC SYMPTOMS) IN CHILDREN AND IMMUNE COMPROMISED PATIENTS.

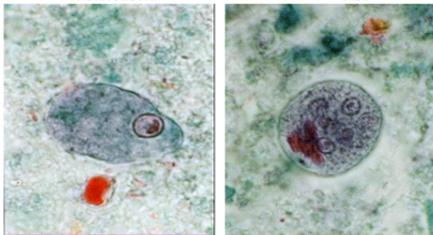


Figure 9

- A common but under-reported intestinal parasite in the USA; hard to detect because of its adhesion to gut mucosa with a ventral sucker.
- Trophozoites (left) cause severe GI symptoms including compromised intestinal lining and mal-absorption of food and medications.
- Cysts (right) are transmitted via water (including tap water) vegetables or fruits washed in contaminated water. Carriers are important in the cycle.
- Drinking water in over 20% of households supplied by surface water treatment.

The pathogenicity of so-called “non-pathogenic” protozoans and the subclinical cases of pathogenic species. from Amin [2-13].

**GIARDIA LAMBLIA**

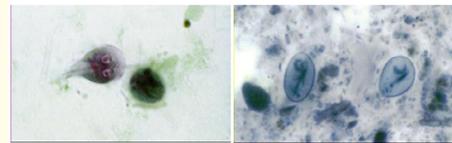


Figure 10

Relationship between symptoms and species of intestinal parasites singly infecting 826 patients in the United States in 2000

Species of parasite	Number (%) of singly infected patients		
	Total	With symptoms	Without symptoms
<b>Pathogenic protozoa</b>			
<i>Blastocystis hominis</i>	581	400 (69)	181 (31)
<i>Cyclospora cayentensis</i>	7	5 (71)	2 (29)
<i>Cryptosporidium parvum</i>	90	63 (70)	27 (30)
<i>Entamoeba histolytica/E. dispar</i>	40	30 (75)	10 (25)
<i>Giardia lamblia</i>	14	14 (100)	0
<b>Non-pathogenic protozoa</b>			
<i>Cholomastix mesnili</i>	2	2 (100)	0
<i>Dientamoeba fragilis</i>	11	8 (73)	3 (27)
<i>Endolimax nana</i>	26	18 (69)	8 (31)
<i>Entamoeba coli</i>	27	20 (74)	7 (26)
<i>Entamoeba hartmanni</i>	6	5 (83)	1 (17)
<i>Iodamoeba butschlii</i>	10	8 (80)	2 (20)
<b>Helminths</b>			
<i>Ascaris lumbricoides</i>	12	11 (92)	1 (8)

Figure 11

FLAGELLATED NON-INTESTINAL PROTOZOANS *TRICHOMONAS VAGINALIS* CAUSES NON-SPECIFIC VAGINITIS, PROSTATE & UROGENITAL INFECTIONS. TRANSMITTED VIA SEXUAL INTERCOURSE. ALSO, IN NEWBORN INFANTS. TROPHOZITE (LEFT), VAGINITIS (SEEN THROUGH VAGINAL SPECULUM), CREAMY DISCHARGE IS OFTEN INFECTED WITH *CANDIDA ALBICANS* (RIGHT).

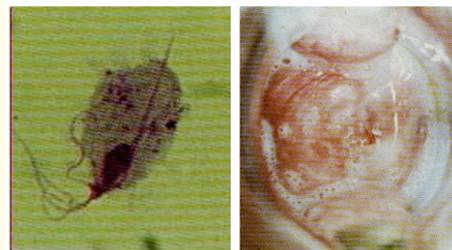


Figure 12

**FLAGELLATED NON-INTESTINAL PROTOZOANS:**  
**NEW WORLD MUCCO-CUTANEOUS LEISHMANIASIS (ESPUNDIA)**  
 TRANSMISSION BY BITE OF SAND FLIES INFECTED FROM RODENT RESERVOIRS.  
 INFECTIVE LEPTOMONAD FORM (RIGHT), CHRONIC HUMAN CASES.

**FLAGELLATED NON-INTESTINAL PROTOZOANS**  
**TRYPANOSOMA CRUZI (CHAGAS DISEASE)**  
 REDUVID (ASSASIN/KISSING) BUGS TRANSMIT INFECTION FROM WILD  
 RESERVOIRS (OPOSSUMS AND ARMADILLOS) TO DOMESTIC HOSTS (DOGS &  
 CATS) & HUMANS CAUSING PERI-ORBITAL EDEMA, CONGESTIVE HEART  
 DISEASE & MEGA-COLON; OTHER NON-CANCER CHRONIC DISEASES

**COCCIDIAN NON-INTESTINAL PROTOZOANS**  
**TOXOPLASMA GONDII**  
 MATURE OOCYSTS IN CAT FECES CAUSE HUMAN INFECTION BY INHALATION.  
 INFECTION STARTS AS ACUTE & ASYMPTOMATIC THEN DESTROYS CELLS IN  
 CONGENITAL & CHRONIC CEREBRAL STATE AS OFTEN SEEN IN AIDS PATIENTS.

Figure 13

**NEMATODA (SPIRAL THREADWORMS) TRICHINELLA SPIRALIS**  
 COSMOPOLITAN IN CARNIVORES, RODENTS & HUMANS EATING PORK WITH INFECTIVE LARVAE  
 IN MUSCLE TISSUE. IN HUMANS, INGESTED LARVAE - ADULTS IN GUT - LARVAE - MIGRATE TO  
 MUSCLES CAUSING SUB-ORBITAL EDEMA, SUB-UNGULA SPLINTER, DIAPHRAGM / RESPIRATORY  
 INSUFFICIENCY. PREVALENCE RATES ARE KNOWN FROM  
 AUTOPSIES.



Figure 17

**INTESTINAL HELMINTHS (WORMS):**  
**NEMATODA (ROUND WORMS) ASCARIS LUMBRICOIDES**  
 THE MOST COMMON WORM PARASITE IN THE USA. FECAL-ORAL  
 CONTAMINATION BRINGS EGGS INTO ORAL CAVITY OF NEW CASE. L2 LARVAE  
 MIGRATE TO LUNGS. ADULTS IN GUT, REACH 1 FOOT LONG.

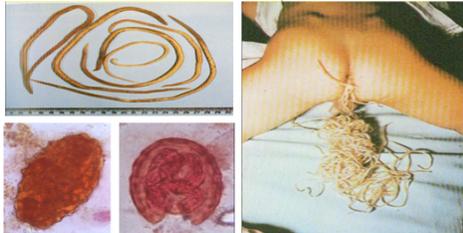


Figure 14

**NEMATODA (PINWORMS) ENTEROBIUS VERMICULARIS**  
 INFECTS THE VERY YOUNG & THE VERY OLD VIA FECAL - ORAL  
 CONTAMINATION DIRECTLY OR INDIRECTLY. EGGS ARE LAID AT ANAL  
 ORIFICE. DIAGNOSIS WITH SCOTCH TAPE METHOD. WORMS IN THE APPENDIX  
 HAVE UNCERTAIN RELATIONSHIP WITH ACUTE APPENDICITIS.



Figure 18

**NEMATODA (ROUND WORMS) ASCARIS LUMBRICOIDES**  
 THE INGESTED EGG EXCYSTS & THE LARVAE PENETRATE THE GUT WALL  
 (LEAKAGE) - BLOOD VESSELS - LUNGS (EOSINOPHILIA, PNEUMONITIS) -  
 BRONCHIOLES - ORAL CAVITY - RE-SWALLOWED - ADULTS MAY OBSTRUCT  
 GUT. MAY ALSO PENETRATE GUT WALL INTO BODY CAVITY (PERITONITIS).

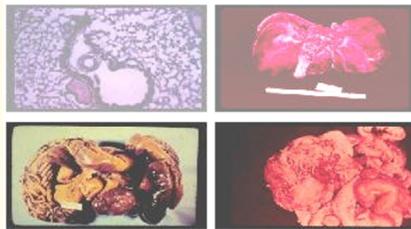


Figure 15

**NEMATODA (WHIPWORMS) TRICHURUS TRICHURAI**  
 IN A LIFE CYCLE SIMILAR TO THAT OF PINWORMS, ADULT WORMS EMBED DEEPLY INTO THE LARGE  
 INTESTINAL WALL WITH THEIR NARROW ANTERIOR END DESTROYING THE AUTONOMIC NERVE GANGLIA  
 CAUSING PROLAPSED RECTUM. DIAGNOSTIC EGGS



Figure 19

**NEMATODA (ROUND WORMS) ANISAKIS**  
**ANISAKIS SPP.** AND RELATED FORMS INFECT HUMANS & MARINE  
 MAMMALS, EX. SEALS AND WHALES, IN N. AMERICA BY EATING  
 INFECTED COD & HERRING, ETC. (SUSHI AND SASHIMI). MOST  
 PREVALENT INFECTIONS IN JAPAN AND HOLLAND.

**NEMATODA (HOOK WORMS)**  
**ANCYLOSTOMA DUODENALE (TOP) & NECATOR AMERICANA (BOTTOM)**  
 HAVE INSATIABLE APPETITE FOR BLOOD (RBC OXYGEN) AS ADULTS. LARVAE  
 IN SOIL, PENETRATE SKIN - BLOOD CIRCULATORY SYSTEM - LUNGS -  
 COUGHED - SWALLOWED - MATURE AS ADULTS IN THE GUT AND FEED.

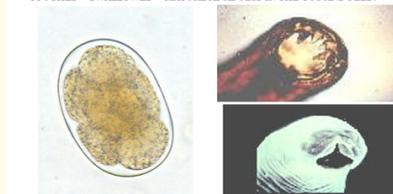


Figure 16

**CESTODA (TAPEWORMS)**  
**DIPHYLLOBOTRIUM LATUM (BROAD FISH TAPEWORM)**  
 LARVAE IN AQUATIC CRUSTACEANS DEVELOP TO PLEROCERCOCIDES IN FISH -  
 INGESTED - ADULTS MAY REACH 30 FOOT IN HUMAN INTESTINE. DEplete VIT. B12  
 - CHRONIC LOSS OF MEMORY & CNS FUNCTIONS. GI SYMPTOMS. HIGH PROLIFERIC  
 RATE IN A LIFE SPAN OF 10 YEARS ONE WORM (LEFT), SCOLEX, EGGS (RIGHT)



Figure 20

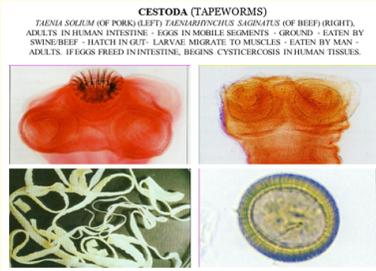


Figure 21

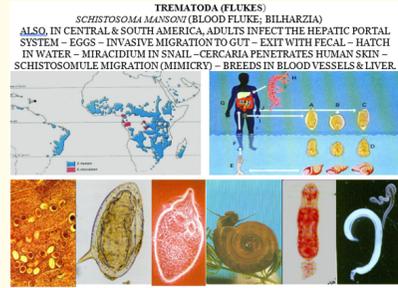


Figure 25

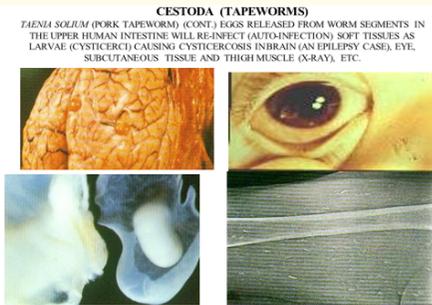


Figure 22

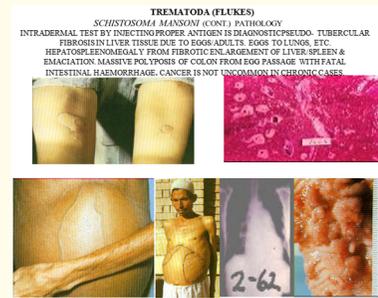


Figure 26

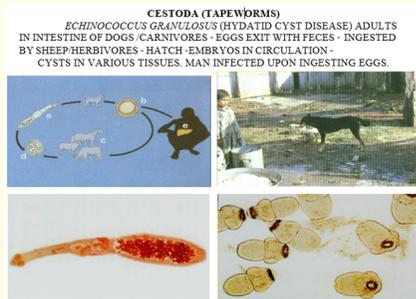


Figure 23

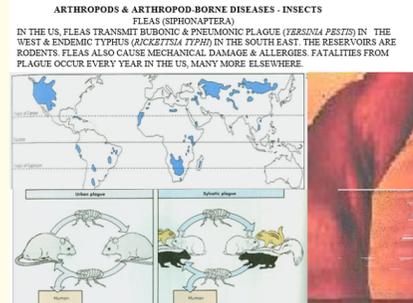


Figure 27



Figure 24

Arthropods and arthropod-borne diseases – arachnids hard ticks (Ixodidae)

Hard ticks transmit 5 major diseases in the us. the reservoir systems are rodents and larger mammals. tick larvae, nymphs and adults all stages feed on blood.

- Rocky Mountain spotted fever: *Rickettsia rickettsii* by *Dermacentor* and *Amblyomma* ticks throughout the country. Map shown to right.

- Colorado tick fever virus by western ticks in the South West.
- *Tularemia* (rabbit fever): *Rickettsia tularensis* by *Haemaphysalis* ticks.
- Lyme disease: *Borrelia burgdorfi* now nationwide by Ixodes ticks. Erythema chronicum (lower right).
- Babesiosis: *Babesia microti* by Ixodes ticks in the North East.

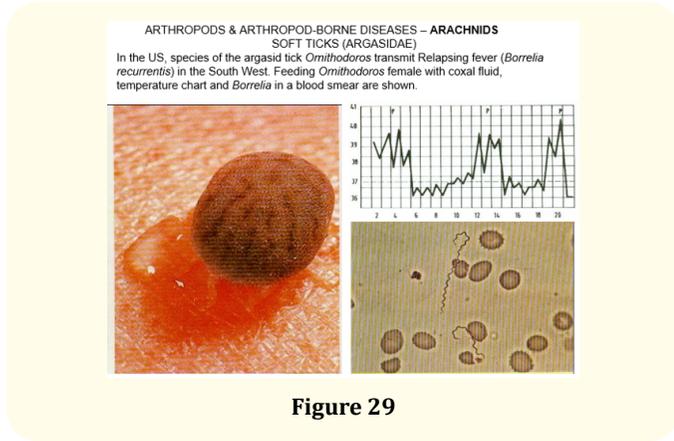
The changing pattern of enteric protozoan infections in the Los Angeles area between 1996-2013. Intern. Res. J. Microbiol. 5: 80-87.

**Our 18 year study from Los Angeles**

In the 7766 specimens collected from 3883 patients in the Los Angeles Area, a total of 1629 parasitic infections (41%) were identified. *Blastocystis hominis* was the most frequent parasitological finding. It was identified in 19% of samples and represented 45% of all parasitological infections (Table 1). The next most common protozoan was *E. histolytica/dispar*. It was found in 6% of samples constituting 15% of all infections. The prevalence of *E. hartmanni*, *C. parvum* and *E. coli* was 6%, 5%, and 4%, respectively. *Dientamoeba fragilis* and *Giardia intestinalis* were found in 4% and <1% of the samples examined, in the same order. These parasites constituted 91.5% of 18 species of intestinal parasites reported from 5792 fecal specimens tested from throughout the US in 2000.



**Figure 28**



**Figure 29**

Parasite species	Patients infected	Prevalence	Percent of infections
<i>Blastocystis hominis</i>	732	19%	45
<i>Entamoeba histolytica/Edispar</i> **	234	6%	15
<i>Entamoeba hartmanni</i> **	226	6%	14
<i>Cryptosporidium parvum</i>	201	5%	12
<i>Entamoeba coli</i> **	156	4%	10
<i>Dientamoeba fragilis</i>	60	1%	3
<i>Giardia intestinalis</i> **	20	0%***	1
Total	1629*	41%	100

**Table 1:** Prevalence of protozoan infections diagnosed from 3883 patients\* examined from Los Angeles County between 1996 and 2013.

\*About 10% of infected patients were concurrently infected with more than 1 species of parasite.

\*\*Trophozoites and cysts

\*\*\*0% indicates values of less than 1%.

**Prevalence throughout the world**

In the United States, *B. hominis* was the most dominant protozoan parasite. Its reported prevalence was 19% (45% of all

infections) (Table 1), 23% in 2000, 20-30% 2, and 12.2%. It was also the most dominant parasite species reported by Kappus and Church., *et al.* but at surprisingly lower prevalences of only 2.6% and 4.3%, respectively.

In developed countries, *B. hominis* appears to also be the dominant intestinal parasite, e.g. Izmir, Turkey, Amsterdam, Holland (24.2%), Sydney, Australia (18-21%), Thessaloniki, Greece (5.3-16.8%), Stockholm, Sweden (4.0%), Berlin, Germany (7.6%), Helsinki, Finland (Table 1; 13%), Rome, Italy (7.5-14.1%), and Brussels, Belgium (Table 1; 9.8%).

In most developing countries in Asia, Africa and South America, however, *E. histolytica/dispar* and/or *G. intestinalis* appear to be the dominant parasites, e.g., Jordan; India; Saudi Arabia; Lebanon, Nicaragua, Ghana, Equatorial Guinea, Pakistan, Iran, and Bangladesh.

#### Prevalence throughout the world (cont.)

Fletcher., *et al.* (2012) concluded that “while some enteric protozoa, such as *Entamoeba* sp., *Cryptosporidium*, and *Giardia* are isolated frequently from diarrheal patients in developing regions such as Asia and sub-Saharan Africa, others, such as *Blastocystis* spp. and *Dientamoeba fragilis* are isolated mainly in developed countries”. We concur.

#### Bibliography

1. Amin OM. “Seasonal prevalence and host relationships of *Cyclospora cayetenensis* in North America during 1996”. *Parasitology International* 47 (1998): 53-58.
2. Amin OM. “Seasonal prevalence of intestinal parasites in the United States during 2000”. *The American Journal of Tropical Medicine and Hygiene* 66 (2002): 799-803.
3. Amin KO and Amin OM. “The changing pattern of enteric protozoan infections in the Los Angeles area between 1996-2013”. *International Research Journal of Microbiology* 5 (2014): 80-87.
4. Amin OM. “Relationships in parasitology. Parts I and II”. *Explore* 5 (1994): 19-22.

5. Amin OM. “Prevalence and host relationships of intestinal protozoan infections during the summer of 1996”. *Explore* 2 (1997): 29-35.
6. Amin OM. “Understanding parasites”. *Explore* 9 (1999): 11-13.
7. Amin OM. “An unusual case of anisakiasis in California, U.S.A”. *Comparative Parasitology* 67 (2000): 71-75.
8. Amin OM. “Evaluation of a new system for the fixation, concentration, and staining of intestinal parasites in fecal specimens, with critical observations on the Trichrome stain”. *Journal of Microbiological Methods* 39 (2000): 127-132.
9. Amin OM. “Evaluation of Trichrome-plus stain. A new permanent stain and procedure for intestinal parasites in fecal specimens”. *Explore* 12 (2003): 4-9.
10. Amin OM. “The epidemiology of *Blastocystis hominis* in the United States”. *Research Journal of Parasitology* 1 (2005): 1-11.
11. Amin OM. “Prevalence, distribution, and host relationships of *Cryptosporidium parvum* (Protozoa) infections in the United States, 2003-2005”. *Explore* 16 (2006): 1-7.
12. Amin OM. “The contribution of pathogenic bacteria to GI symptoms in parasite-free patients”. *Journal of Bacteriology and Parasitology* 2 (2011): 109-112.
13. Amin OM. “The significance of biomarkers in the interpretation of comprehensive stool analysis for parasite diagnosis”. *Parasitology United Journal* 4 (2011): 231-234.

#### Volume 2 Issue 6 June 2019

© All rights are reserved by Omar Amin.