

Lyme disease: 21st Century Epidemic?

Presented by:
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S. AUREUS. L BODIES IN EARLY GROWTH.
NO ANTIBIOTIC. Mattman, Tunstall,
Rossmore.

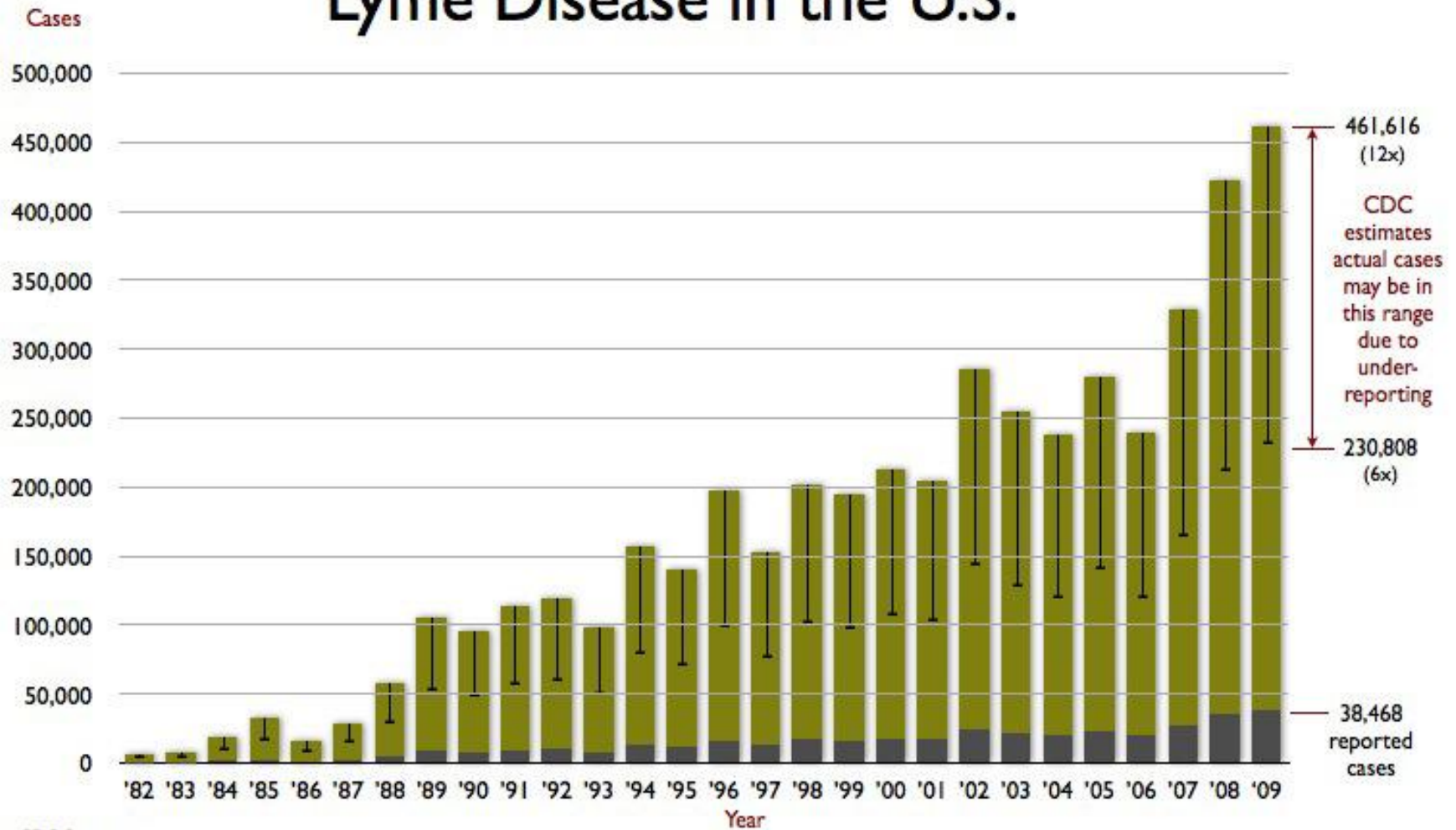
Spirochete under phase contrast



Lyme: How prevalent?

Lyme disease has become the most rapidly spreading infectious disease in the United States.

Lyme Disease in the U.S.



CDC Sources

1995-2009: http://www.cdc.gov/ncidod/dvbid/lyme/ld_rptdLymeCasesbyState.htm

1982-1994: <http://www.cdc.gov/mmwr/PDF/wk/mm4523.pdf>

Cases are "under-reported by 6- to 12-fold": <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5317a4.htm>

CDC 2008/9 totals include both confirmed & probable cases: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5831a5.htm>

MORE LD THAN HIV/AIDS

History of LD

<u>Year</u>	<u>Country</u>	<u>1^o Person</u>	<u>LD Condition</u>
1883	Germany	Buchwald	ACA
1899	U.S.	Holder	US ACA
1909	Sweden	Afzelius	ECM disease
1911	Switzerland	Burckhardt	lymphocytoma
1922	France	Garin/Bujadoux	neurologic
1941	Germany	Bannwarth	neurologic triad
1969	U.S.	Scrimenti	1st US acquired EM
1975	U.S.	Malawista/Steere	JRA cluster, Lyme arthritis
1982	U.S.	Burgdorfer	<i>Borrelia burgdorferi</i>
1985	Hungary	Bozsik	Lyme "Borreliosis"
1988	U.S.	Forschner, et al	1st Lyme Organization

Otzi the caveman (3300 B.C.)



Lyme Disease Worldwide





Lyme Disease aka “Borreliosis” is...

- a multisystemic bacterial infection spread by the bite
- of a tick, flea, mosquito, black fly, placental transfer,
- sexual intercourse, transfusions, aerosolized, ???????

MULTIPLE INFECTIOUS DISEASE SYNDROME

- Tick is Mother Nature's "dirty needle"
- One tick can inoculate you with
- Spirochetes(200 to 300 strains)
- Parasites(babesia)
- Bacteria(bartonella,ehrlichia,anaplasma)
- Mycoplasmas
- Viruses (West Nile, XMRV)
- xenotropic murine leukemia virus
- isolated in prostate cancer . Powasso

Woman dies after contracting rare tick – borne virus

- Infectious Disease July 2017
- Bourbon virus



Microscopic view of a nematode

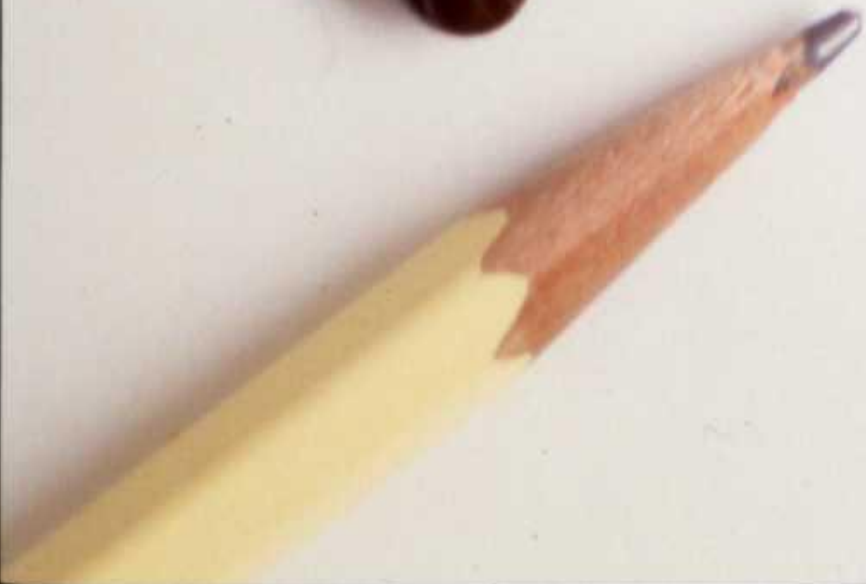
Transmission of LD

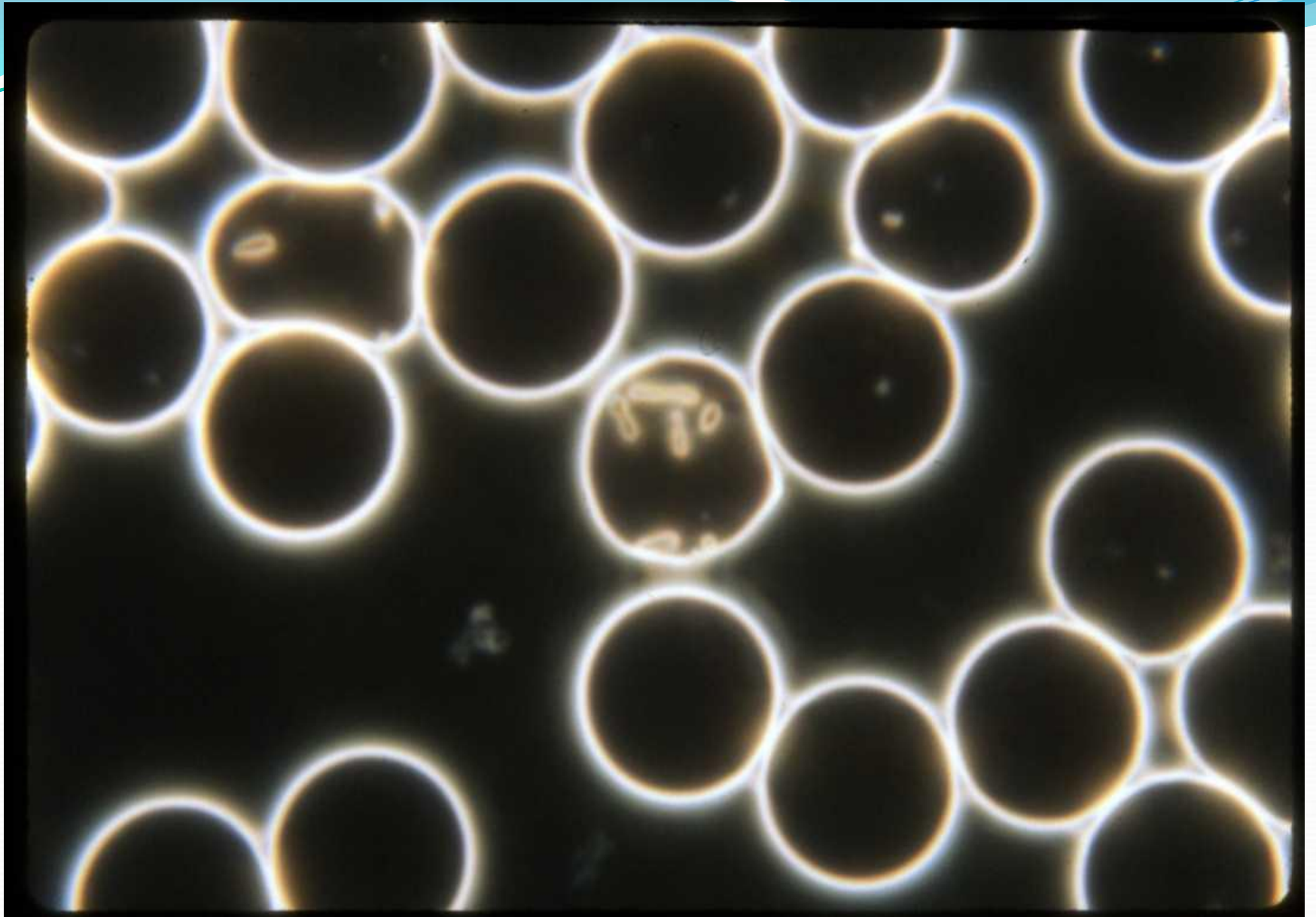
- Ticks acquire the bacterium by feeding on an infected animal. Then spread the infection to other animals and humans in subsequent feedings.
- Ticks have 4 life stages: egg, larva, nymph, adult
- **Vectors**
 - Black-legged tick - *Ixodes scapularis*
 - Western black-legged tick - *Ixodes pacificus*
 - Lone star tick - *Amblyomma americanum*



TICK

Tick





Lyme Disease Diagnosis

- The diagnosis of Lyme disease is a *clinical* one based on the patients symptoms
- Indirect tests (IFA, ELISA, EIA, Western Blot) detect the immune system response.
- Direct detection tests (culture, PCR, antigen detection) may prove infection, are technically difficult, and are usually expensive.
- A negative test result *does not* "rule out" infection.

Darkfield Microscopy

- Use eyes usually wont deceive you

Spinal tap

- Spinal tap can miss 90% unless
- the darkfield microscope is employed.
- Darkfield examination of CSF in MS and ALS
- spirochetes will be observed. Blood of ALS
- reveals hundreds of spirochetes per HPF

Tick-Borne Disorders Affecting Humans

- Babesiosis
- Colorado Tick Fever
- Ehrlichiosis
- Q Fever
- Rocky Mountain Spotted Fever
- Relapsing Fever
- Tick Paralysis
- Tularemia

Blood Testing

- “ELISA testing” may yield 60-80% false negative results.
- “Western Blot” = Better choice of the two. *IgG*
- *IgM (96% specific)*
- *What if the patient does not produce Antibodies????*

Center for Disease Control (CDC)

- Using their criteria, the majority of cases would likely be overlooked. (Dearborn 1994 , 5 specific
- bands were necessary for + criterion)
- Less than 1/3 of LD patients recall the classic “bullseye rash.”
- Most physicians have been taught to believe that the laboratory testing is the definitive measure for making the diagnosis.

Common symptoms

- Headaches ,photophobias,nuchal stiffness
- Fatigue, fibromyalgia,autonomic dysfunction (Shy – Drager syndrome)
- Arthritis (single joints – multiple,soft
- rheumatism)
- Neurological –peripheral neuropathies,
- MS, ALS, Alzheimer’s
- Imbalance (Romberg’s)
- Rage (Borrelia /bartonella??)



Lou Gehrig

- Had summer home in Lyme Conn.
- From 1999 to 2001, Dr. Martin Atkinson- Barr tested 150 ALS patients . All positive for LD
- Thus late stage LD (stage 3) can be treated with aggress. antibiotics (iv metro, ceftriaxone,orals, plus secondary infections such as fungi , dental infections
- causing demyelination.)

Stages of Lyme disease

- Stage 1- days to weeks following infection
 - EM, chills ,fever, pruritis,malaise,cephalgias
 - myalgias.
- Stage 2- weeks to months
 - Bell's palsy, facial muscle weakness.
 - Large joint arthralgias
 - Cardiac symptoms- heart block , palpitations
- Stage 3- months to years.
 - Neurological (MS,ALS) cognitive dysfunction
 - speech impediments, CFS

Chronic Lyme Disease

- Present greater than one year
- VERY DIFFICULT TO CURE (maybe
- Not all at)

Early Symptoms of LD

- Lyme disease can cause a myriad of symptoms which are significantly more varied than those required for surveillance purposes.
- Early symptoms:
 - EM Rash...Erythema migrans
 - Early rash occurs at the site of the bite
 - Reddish/purple on light skin, bruised on dark skin
 - Central clearing to continuous discoloration
 - Variety of shape
 - EM Rash...Erythema migrans
 - Viral-like illness...sore throat, aches, pain, fever, nausea, vomiting.















Forms of Lyme Arthritis

- Associated with ECM (polyarthralgias)
- Associated with ACA (Oligoarticular; subluxation of small joints; polyarthritits)
- Juvenile-Onset (Less than age 8) – Benign
- Resembling Reiter's Disease (Oligoarticular; large effusions, peripheral enthesiopathy)
- Resembling rheumatoid arthritis (Polyarticular; DR₃/DR₄ Positive; Erosive Disease; Resistant to antibiotic therapy.

Musculoskeletal Component

- LD has affinity for the enthesis. Thus producing
- arthritic symptoms as in degenerative joint disease.

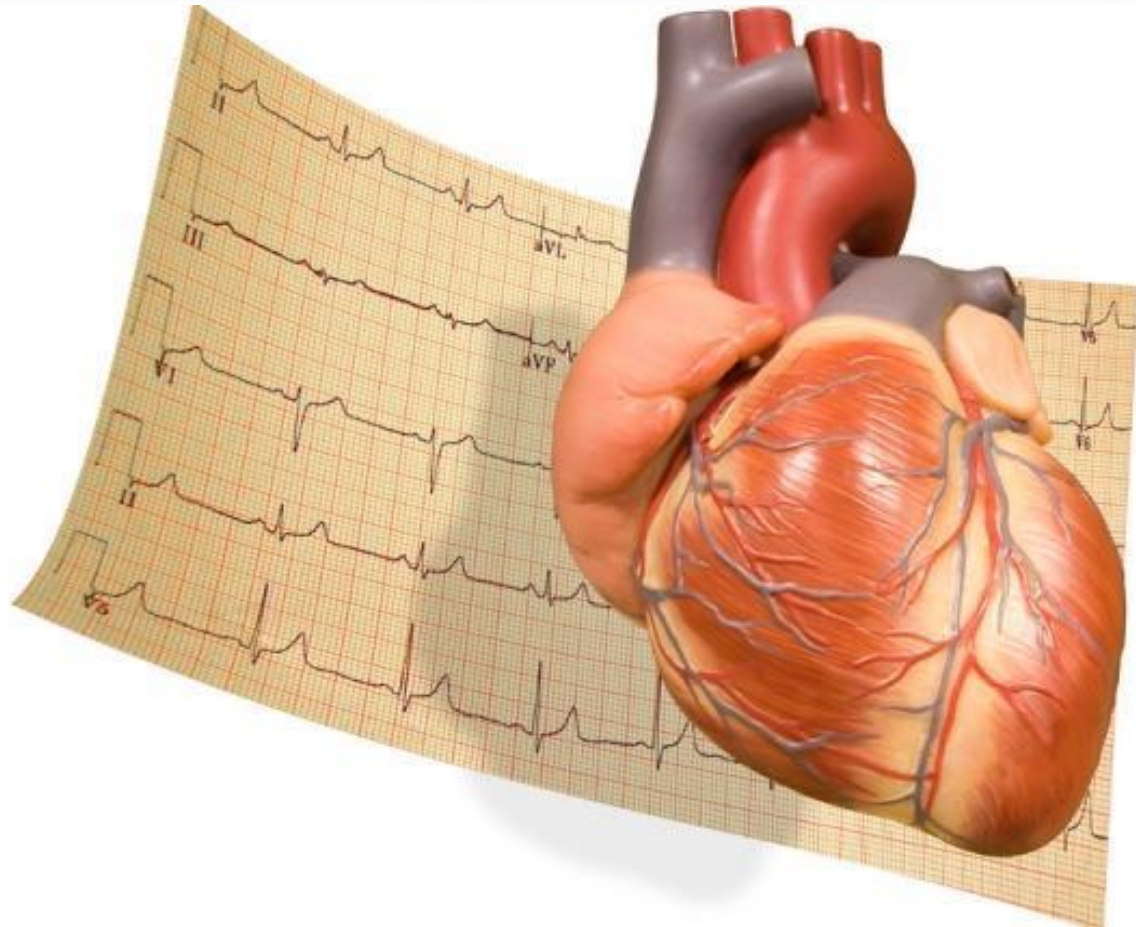
- Think scoliosis - placentally acquired or in youth

Symptoms of Disseminated LD

- Dermatologic - multiple rashes per bite, lymphocytomas, acrodermitis chronica atrophicans
- Neurologic - headache, meningitis, cranial nerve palsy, peripheral nerve problems, cognitive or behavioral changes
- Cardiovascular - irregular beats, conduction defects or block
- Ophthalmologic - inflammation of parts of eye, blindness
- Musculoskeletal - joint aches, pain, swelling

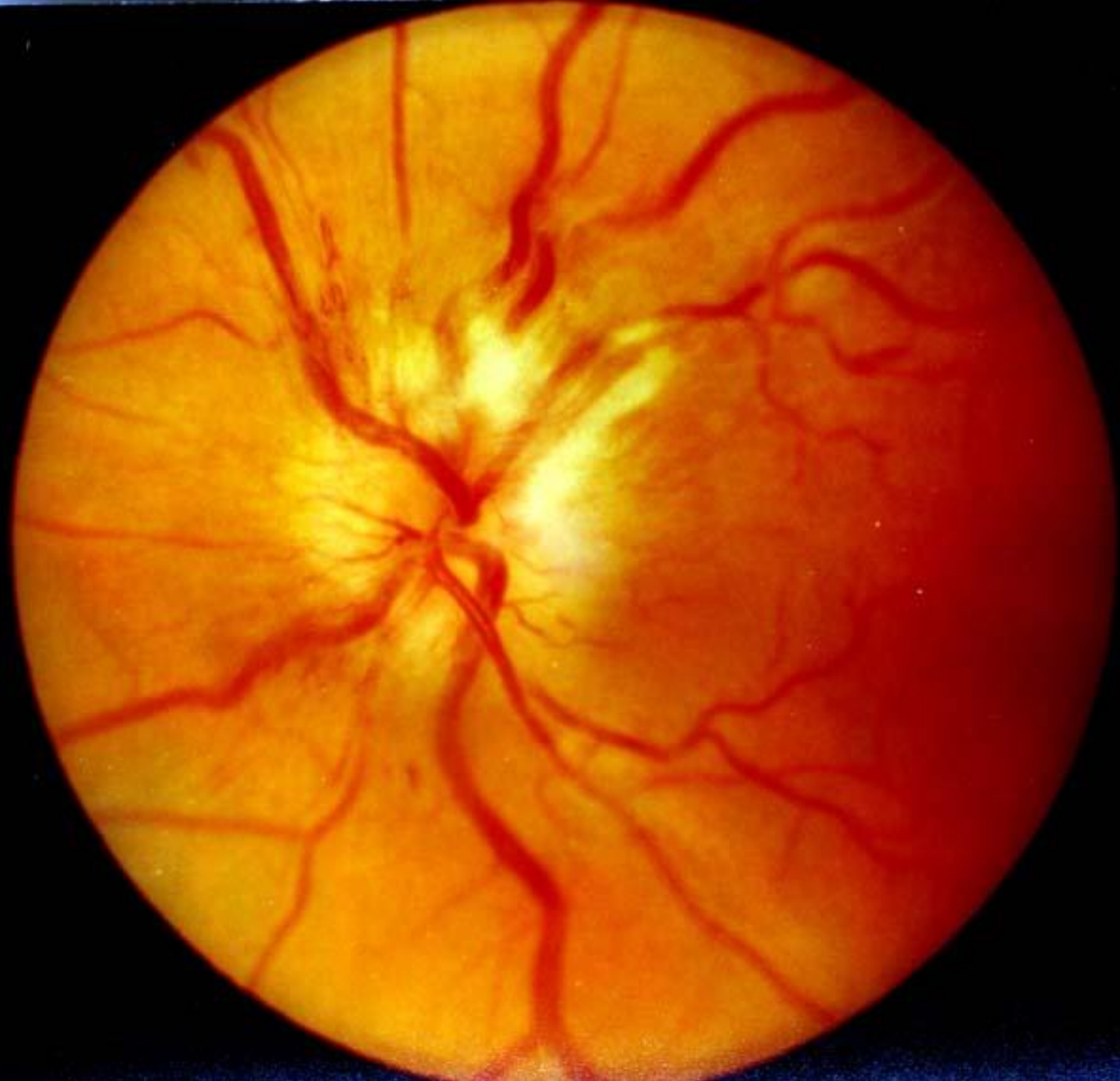


Heart arrhythmias





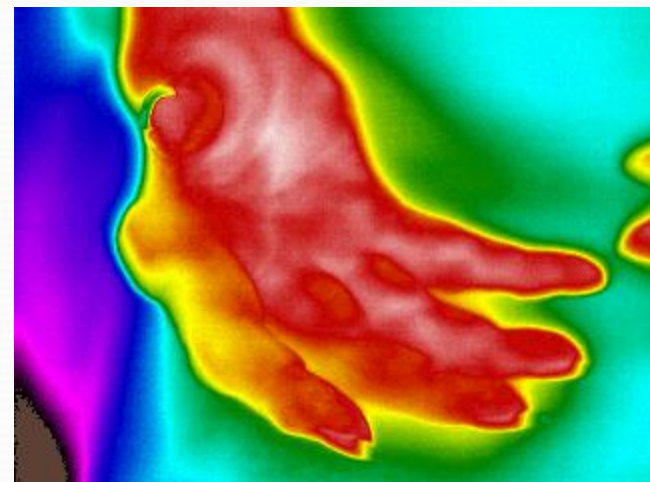
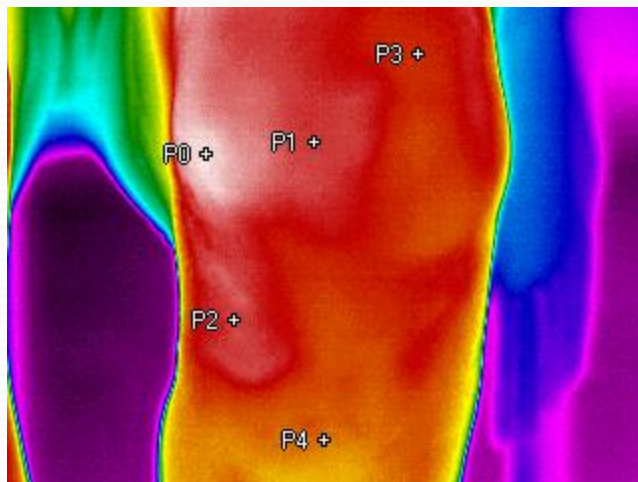
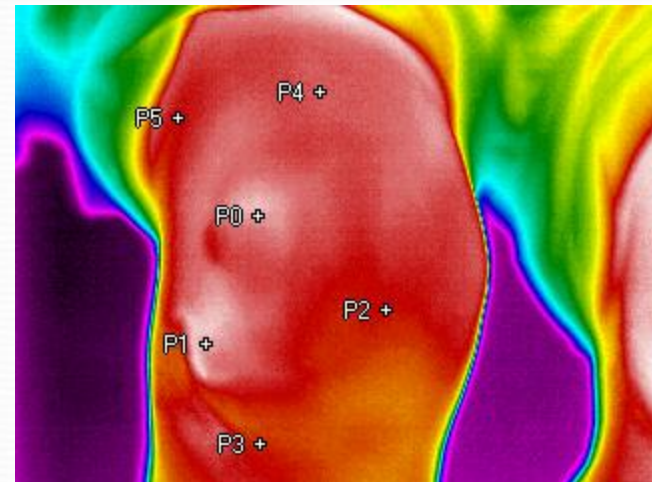
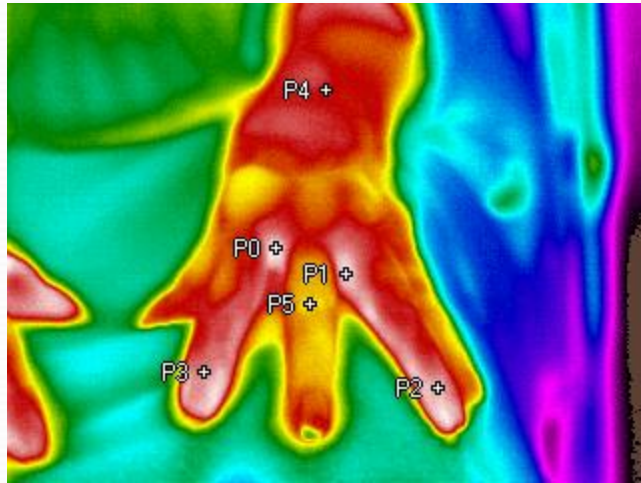




Infrared Imaging

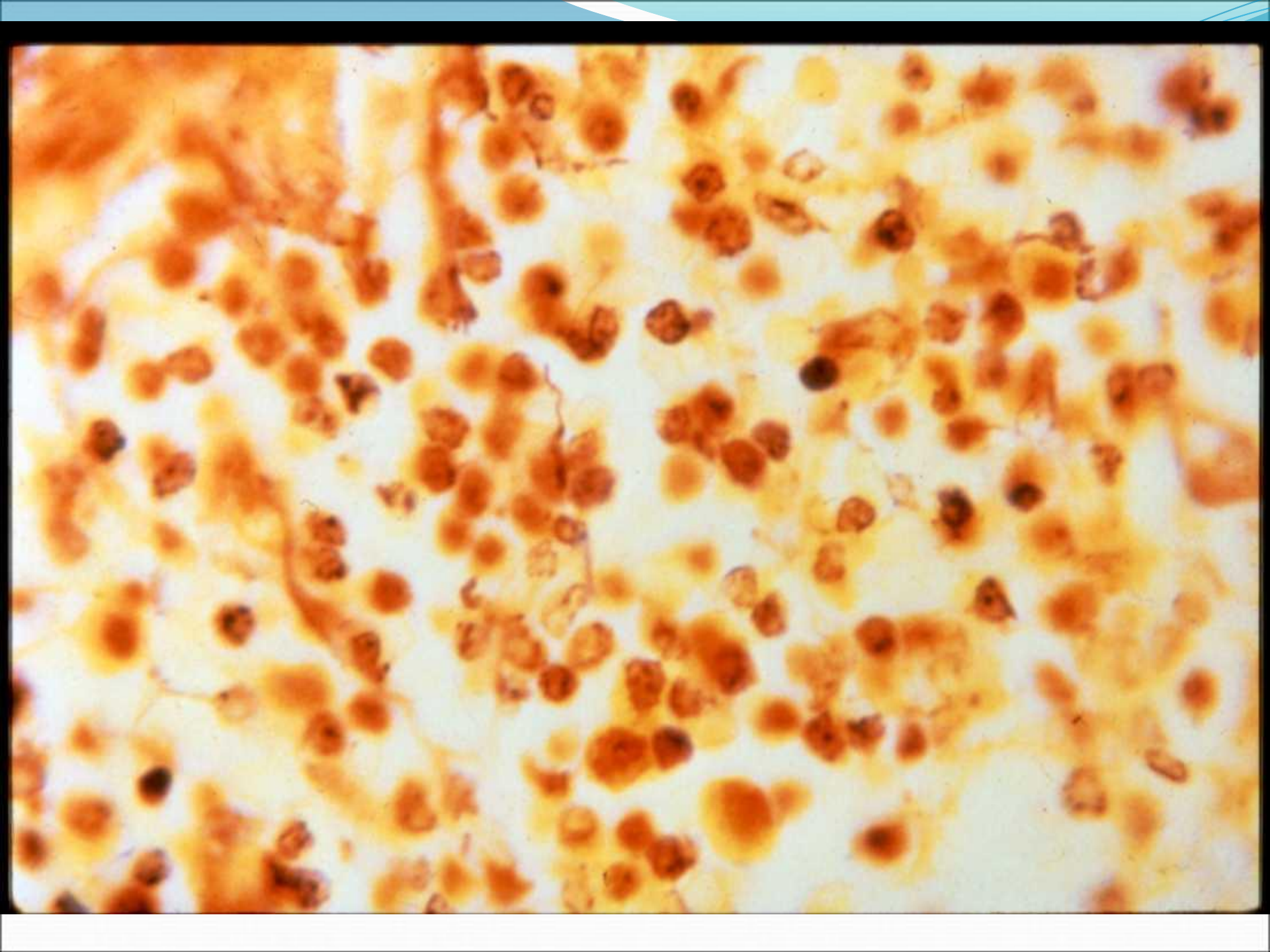


Thermal Images



Seeing is believing

- Don't forget: Darkfield Microscopy
- Remember that syphilis is also a spirochetal disease for which Darkfield microscopy has been utilized for over 50 years.



CNS Lyme

- Multiple sclerosis
- Lou Gehrig's / ALS
- Alzheimer's
- Parkinson's ?

Therapeutic Aspects of Lyme Disease

- 4 groups of antibiotics are used in the treatment of LD: penicillins, tetracyclines, cephalosporins & macrolides
- Without a reliable direct detection test, no antibiotic has proven the ability to kill all of the bacteria
- Early diagnosis & adequate treatment can prevent the development of later complications
- Some patients can have permanent damage &/or become persistently infected

Ehrlichia

- Ehrlichia chaffeensis is the newly characterized agent of ehrlichiosis in the United States
- Ehrlichia sennetsu is the agent of a mononucleosis-like illness in the Far East.
- The agents of ehrlichiosis are grouped in the family Rickettsiaceae

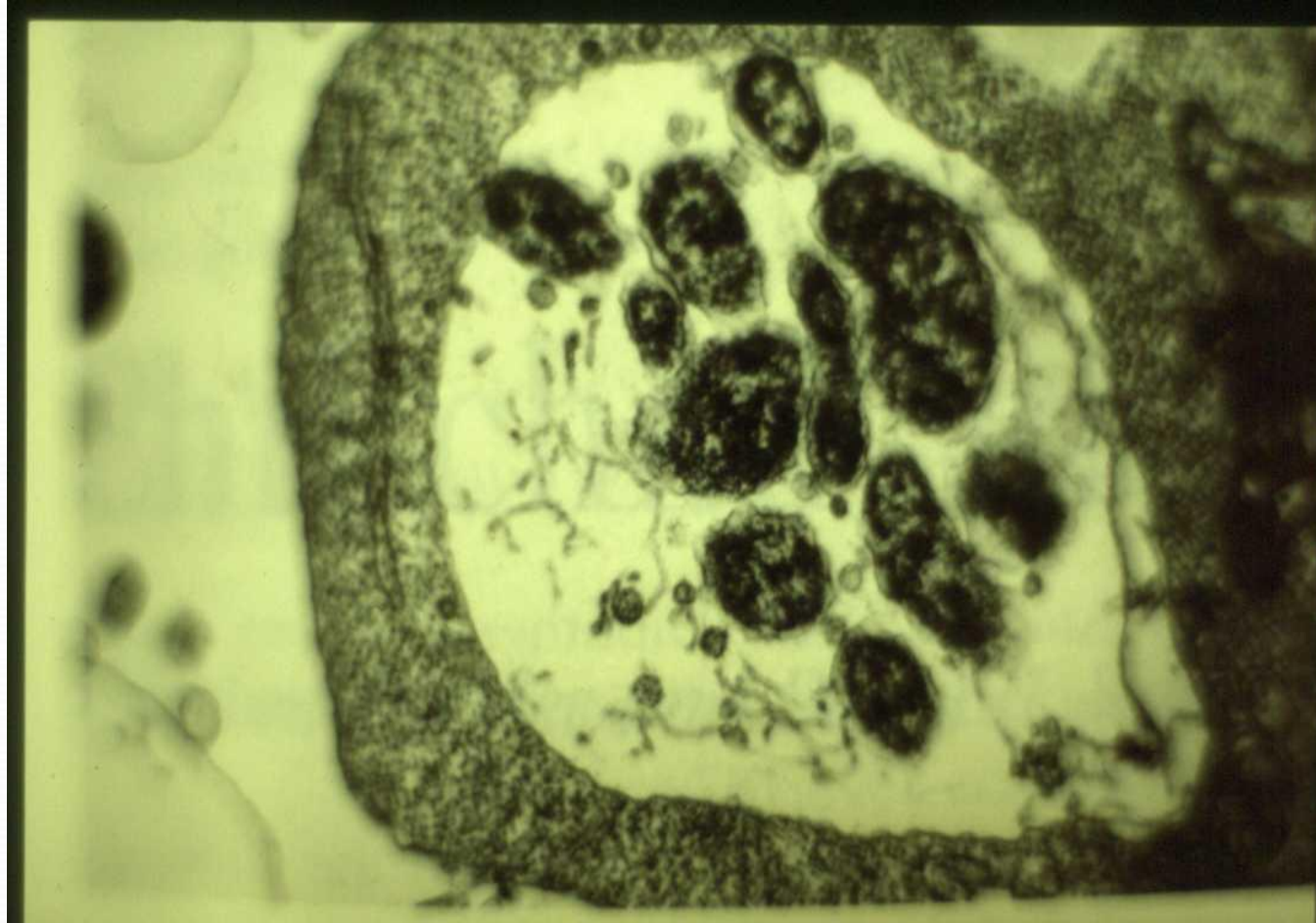
Ehrlichiosis

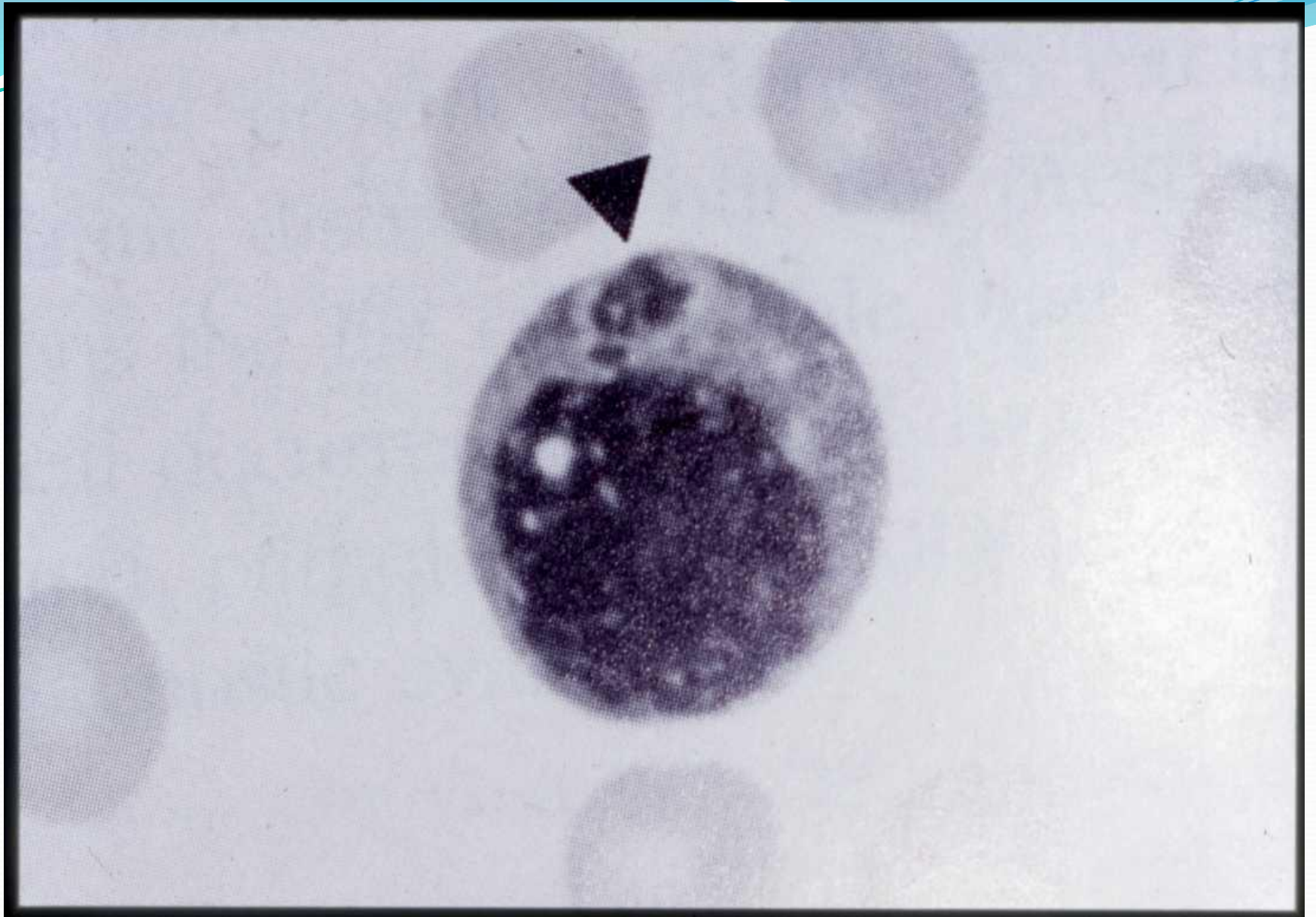
- These microbes are bacteria living inside the cell within each host.
- Unlike rickettsiae that infect endothelial cells, the target cell of the Ehrlichia are the white blood cells of the immune system.

Ehrlichiosis

- Depending on the species of Ehrlichia, the infected cells are macrophages, monocytes or neutrophils.
- The Ehrlichia attach by means of a surface protein to a host cell receptor, gain access to an endosome, and actively inhibit lysosome.

Microscopic Appearance of Ehrlichia





Ehrlichia Treatment

- Antibiotics of choice
 - 1st: Doxycycline
 - 2nd: Tetracycline
 - 3rd: Ciprofloxacin

Babesiosis

- Evidence for human infection with a newly recognized Babesia-like protozoan is now emerging in the Western United States.
- These infections are produced by an as yet unnamed group of protozoa related to the so-called WA-1 strain.
- These agents are related to B. Gibsoni, which may cause anemia due to the bursting of red blood cells in dogs.

Babesiosis

- Protozoan parasites of the genus *Babesia*, along with their relatives the *Theileridae*, comprise a genetically and antigenically diverse group of intraerythrocytic pathogens.
- They are called “piroplasm” because of their pear-shaped intraerythrocytic appearance of their dividing forms.

Babesiosis

- All the piroplasms are tick-transmitted agents that replicate within blood cells.
- In the US, human babesiosis is an emerging tick transmitted infection, along with LD and ehrlichiosis.
- All three agents, *B. Microti*, *B. Burgdorferi*, and the agent of human granulocytic ehrlichiosis may be transmitted by ticks, *Ixodes Dammini* also known as *I. scapularis*.

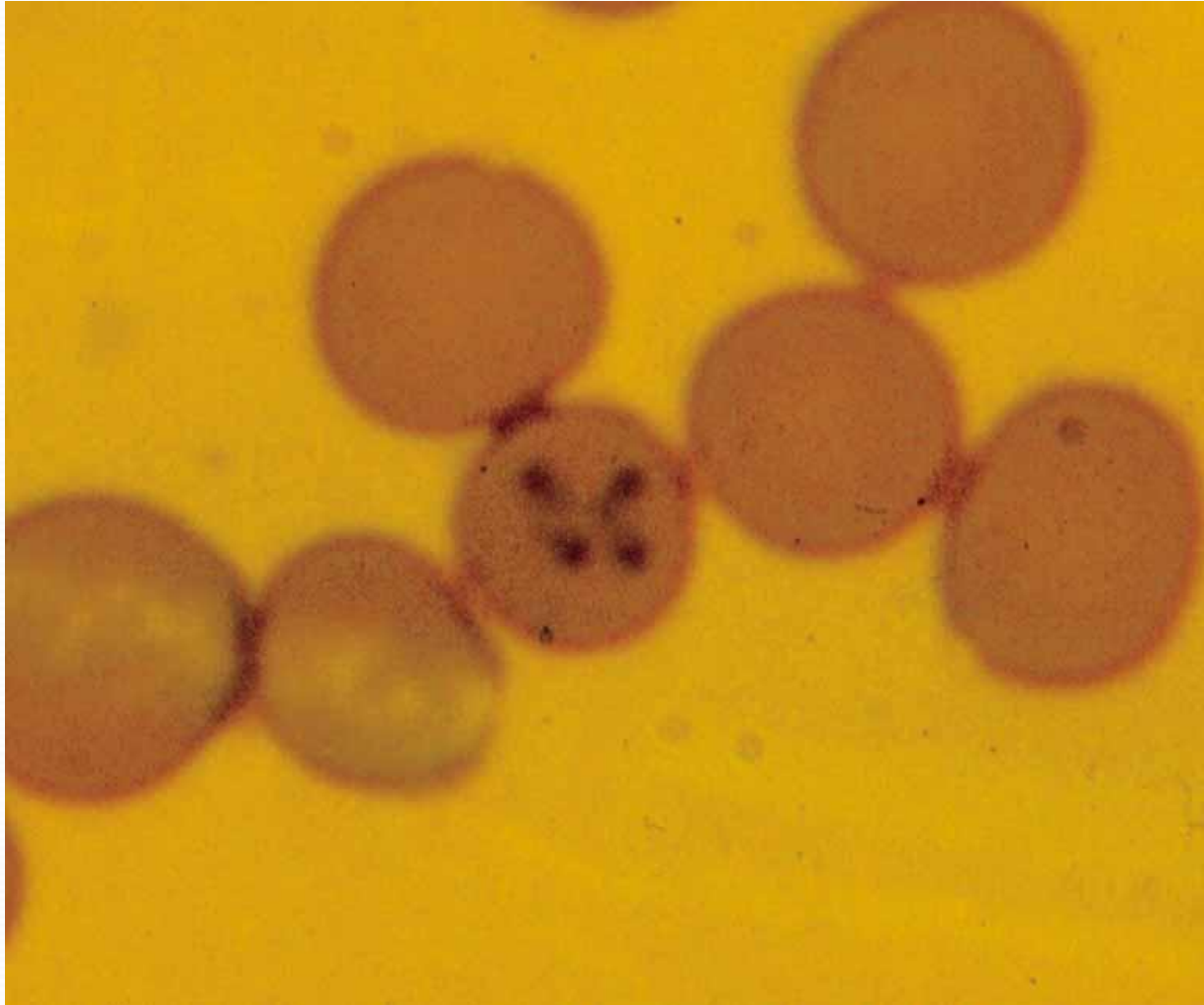
Babesia

- Fatigue
- Fever , chills
- Joint aches
- Paresthesias
- Hemolytic anemia
- Cognitive decline
- Emotional instability
- Thrombocytopenia
-

Babesia Treatment

- Atovaquone (Mepron 750mg bid) plus azithromycin (Zithromax 500 to 1000 mg qd).
- Quinine and Clindamycin secondary.
- Artemisia annua (Chinese Wormwood) 500mg tid.

Babesia under the scope





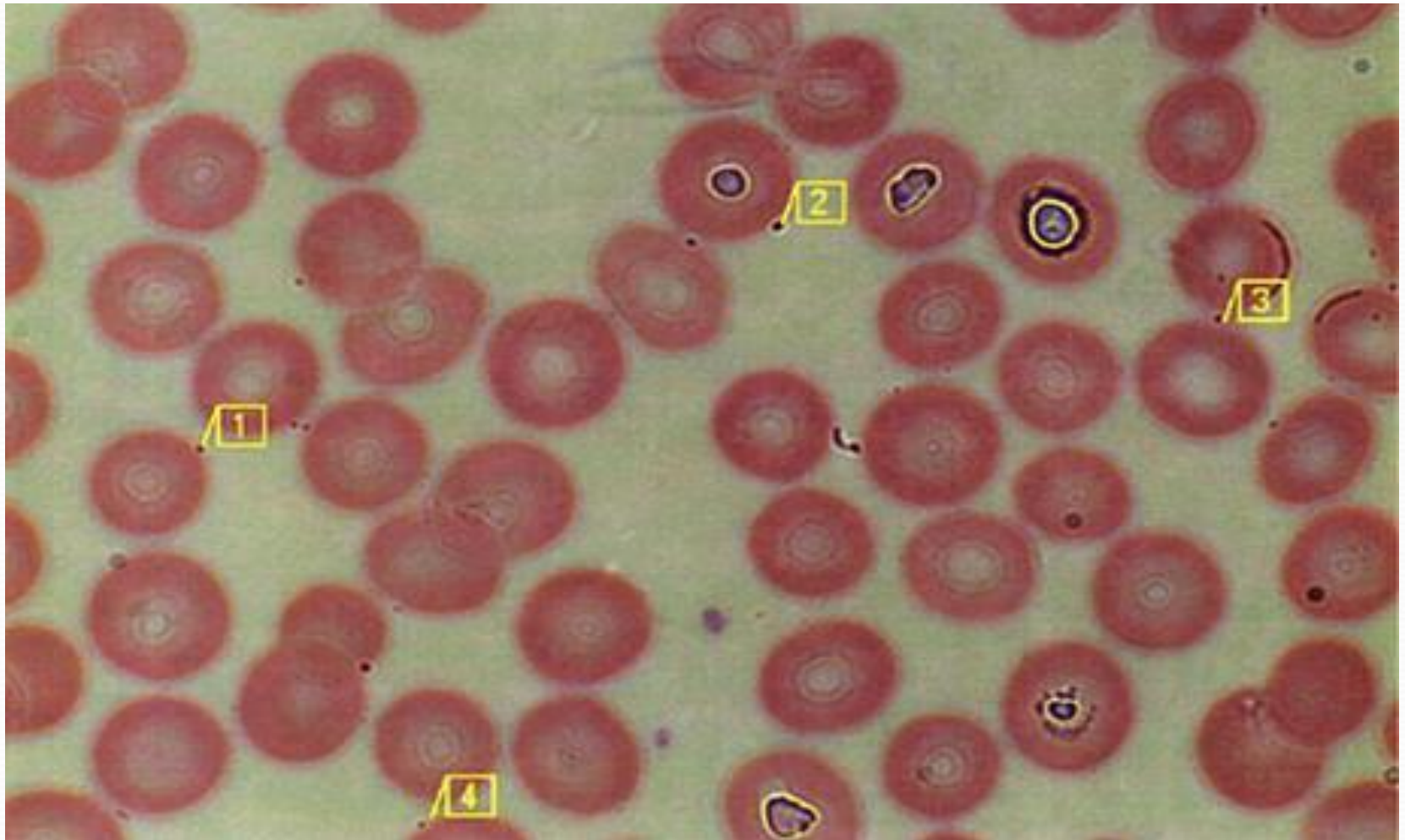
Bartonella

- Not your average Cat Scratch disease
- Over 33 different strains(8 known to infect humans)
- Transmitted by ticks , fleas, sand flies
- Intracellular (“inside-cell”) organism
- Cats/dogs can pass it on too.
- Emits VEGF – which produces these cherry angiomas

Human Disease

- Chronic fatigue syndrome
- Bacillary angiomatosis
- Peliosis hepatitis
- Carrion's disease
- Endocarditis
- Erythema multiforma
- Recurrent bacteremias
- Thrombocytopenic purpura

Intracellular Bartonella



Treatment options

- Azithromax
- Doxycycline
- Ciprofloxin
- Bactrim
- Gentamycin
- Rifambin/rifabutin

Indicators of infection

VEGF – (Vascular Endothelial Growth Factor)

Abnormal stretch marks, papules, erosions, irregular vascular changes, cherry angiomas.

Neuroretinitis – Inflammation of the eye

Osteomyelitis – Bone inflammation



Other considerations

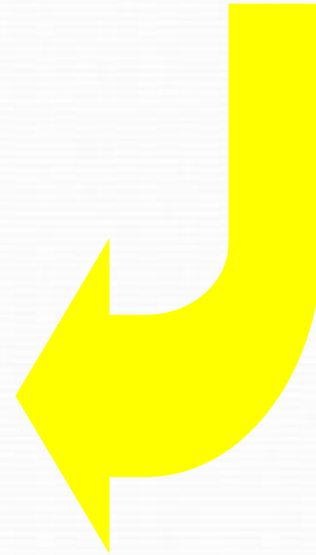
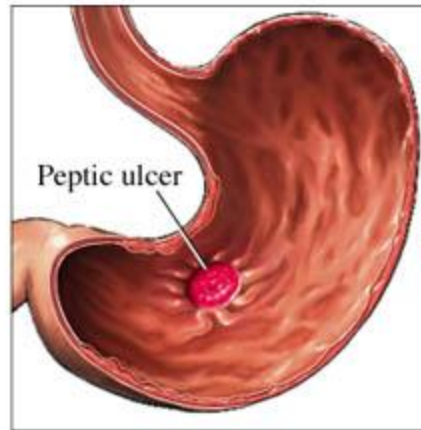
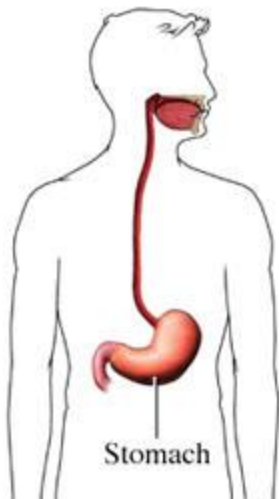
- Weakens immune system due to immunosuppression
- Often the blood tests are negative, but symptoms are present and there are positive microscope findings.
- May be more significant than Borrelia



“Helicobacter Pylori” bacterium



Barry Marshall, MD
2005 Nobel Prize physiology



Infection as the cause for other common diseases?

- Lou Gehrig's disease = ?? Neuroborreliosis
- Multiple Sclerosis = ?? Lyme disease
- Alzheimer's = ?? Deep-seated brain infection
- Dr Alan MacDonald (MD) multiple "You Tube " episodes
- demonstrating neuro manifestation on autopsy of parasites with internal borrelia. Glioblastoma

From Cradle to Grave

Lyme Dz has been implicated as a factor in :

Autism

Scoliosis

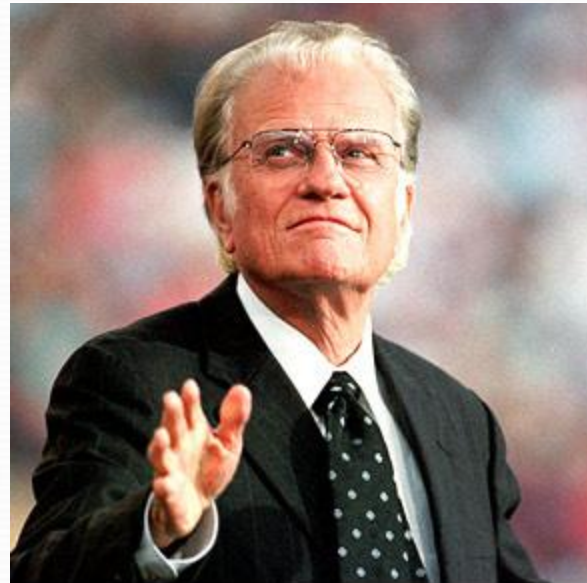
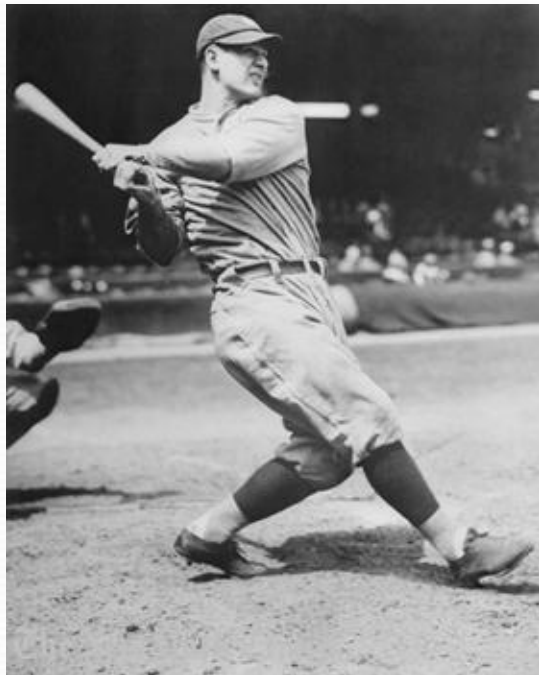
Multiple Sclerosis

Lou Gehrigs Dx (ALS)

Alzheimers (End of Alzheimers , Dale Bredelsen MD)

Lymphomas

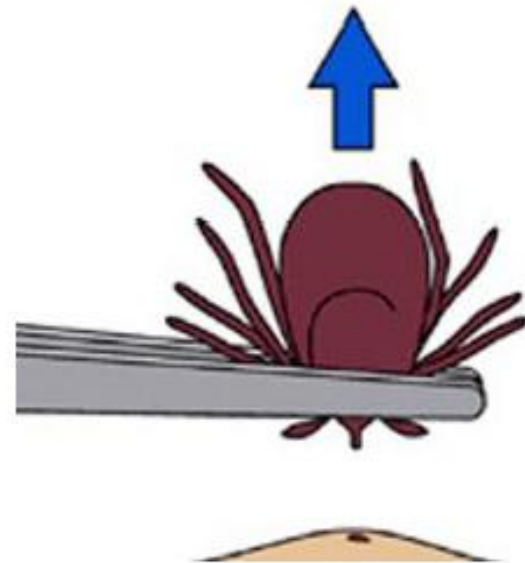
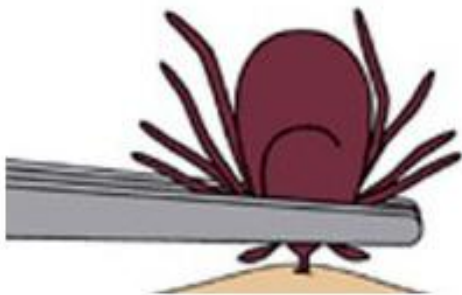
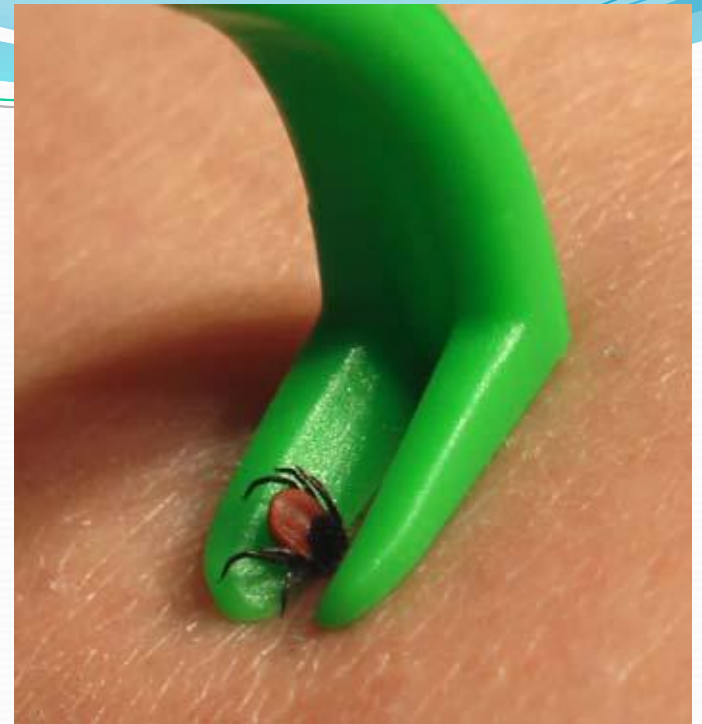
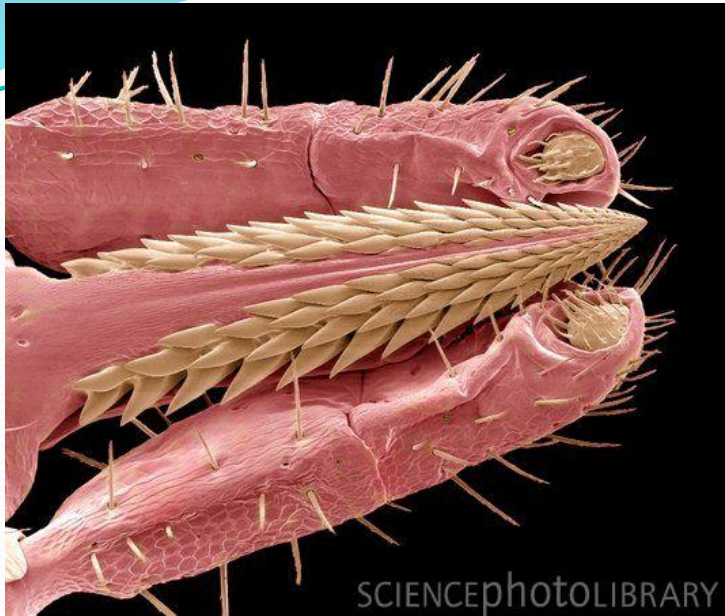
CLL (LD in a patient with CLL mimics leukemic meningitis) Onkologie, Nov ,2007)



Prevention

- Wear tight fitting clothes
- Tick exam of body to include hair and scalp.
- Inspect hunting, camping gear, companion or pack animals.
- Repellants: DEET, Permethrin-based upon clothing and/or skin...nothing works 100%.





Borellia Forms

- Intracellular
- Cell wall deficient (L forms)
- Cystic

- Metronidazol – cystic forms
- Biaxin – cidal and intracellular
- Rocephin – iv or im . Intracellular.

Biofilms

- A slimy matrix of extracellular polymeric substances
- Produced by bacteria which protects them when aggregated.
- Quorum sensing
- Resistant to antibiotics and disinfectants

Other modalities of treatments

- Hydrogen peroxide (IV , medical grade) Charles Farr
- Ozone – Autoheme, apheresis
- Bee venom
- Hyperthermia –whole body , extracorporeal
- Colloidal silver – nanoparticles
- CBD – anti infectious component

Willy Burgdorfer

- It is now clear that *B. burgdorferi* can persist within
 - the nervous system for years, causing progressive
 - illness, and increasing evidence suggests also that
 - The spirochete can remain latent for years before
 - producing clinical symptoms
-
- Hamilton, Montana 1983

Best references

- www.ILADS.org
- www.lymedisease.org
- ImmunoscienceLabs (Beverly Hills, CA)
Igenex (Palo Alto, CA)
- Cure Unknown (Pamela Weintraub)
- Lyme Disease and the S.S. Elbrus (Rachel Verdon)
- Bitten , Kris Newby, 2019

J.A.

- 29 y.o.male- recent onset severe headache, partial
 - paralysis(transverse myelitis)
- medical history- worked and played outside (fishing, construction) Removed ticks from himself and dog.

Told by local ER's "we don't have Lyme dz here "

Conventional testing (blood , x-ray) all normal.

Darkfield was highly +++

Specialized testing (Immunoscience Lab)- ++ for
Borr,Bab,

A.S.

- Sudden onset of gait disturbance after camping trip
- Always outside with her horse
- Rapid onset on paralysis one leg(wheelchair)
- Transverse myelitis

- Iv Metronidazol +Rocephin
- Orals – Biaxin, Doxy
- Ozone – via PICC line
- Review darkfield- after 6,spirochetes present but fewer and immature type consistent with patient on AB

LD causes immunosuppression Thus activating opportunistic infections:

- Many testing procedures are false negatives due to lack of antibody response due to Immunosuppression.
- Activation of opportunistic infections (Toxo, HHS 6,
- candida , other fungal infections, MRSA, MARCONS,
- staph , strep,CMV, etc)




There are

- NO LYME POPES

Tick bite prophylaxis

- CDC= single dose antibiotic preferably doxycycline
- ILADS= 200 mg doxycycline daily for 20 day .
- Dr H = doxy and biaxin bid for one month .

- BUT – what silver bullet with eliminate parasites such
- as babesia, and bartonella, viruses, etc. ???

- 
- The good physician treats the disease
 - The great physician treats the patient who has the disease