LymeSig

Volume 2, Number 3 *A function of intelligence in any species is survival.* *January 1998*

Dave's Stuff... Doings, Updates

I've been more active lately on the sci.med.diseases.lyme.org Newsgroup on the internet.An interesting pathologist from Texas chose to join in the discussions. A number of the readers and posters of messages to the newsgroup were just a bit upset that from a course outline he published about diseases (he teaches second year med students this particular stuff), he grouped Lyme disease under the heading of exotic diseases. His remark about Lyme disease as an exotic disease "many unhappy Americans erroneously think they have," drew a lot of fiery attention. A war of opinions ensued, involving at least 147 messages in one single thread of posts, and more under other subject threads.

The idea that lyme disease is an "exotic" disease was pretty well ruled out. Victims of lyme disease indicated that prior to Ld, they were not unhappy. Some people were a little upset about presumptions in regards to what they think, especially some with known tick bites and Erythema Migrans rashes. I was curious about the scientific process of assessing what I think

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The Host-Pathogen Relationship Part Two:

Researchers' Views ~Various pages ~ with Notes and Observations from Tom Grier on 1.

See Page 3 for personal letters and short stuff.

See my Web Pages (in progress) at http://pages.prodigy.com/JRQR18A/index.htm

See page 7 for Info About LymeSig

Notes and Observations on Cell Wall Deficient Forms, from a lecture by Dr. Lida Mattman PhD. (Ld Conference, Detroit, Oct 97)

by Tom Grier

Wouldn't it be nice if when you're on safari, and you are charged by a man-eating Lion, that you knew your gun was loaded with live ammo instead of blanks? I'd like to feel that way when I think about antibiotic treatment of Lyme disease. But what if we're just shooting blanks? At a recent Lyme disease conference in Detroit, Michigan, that fear of shooting blanks became palpable when I listened to Dr. Lida Mattman Ph.D. speak about cell wall deficient forms (CWD) of bacterial pathogens, specifically B. burgdorferi, the cause of Lyme disease.

Dr. Lida Mattman a professor Emeritus from Wayne State University has been studying spirochetes for over fifty years, and was a protégé of the great Gabriel Steiner, who was the first to establish in a series of papers going back to 1918, that Multiple Sclerosis was associated in many cases with a spirochete. Since her association with Steiner, Lida Mattman has had a continued interest in spirochetes, but for the last seven years she has focused the bulk of her attentions on cell wall deficient forms.

This area of microbiology has long been neglected, and we are now paying a price for that neglect. Dr. Mattman's work

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Notes and Observations... Cell Wall Deficient Forms, Cont.

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suggests that cell wall deficient forms are prevalent and pathogenic. Cell wall deficient forms of a mycobacterium may be the cause of Sarcoidosis. Other diseases such as Crohn's disease, coronary thrombosis, Kaposi's sarcoma, endocarditis, and MS may all involve cell wall deficient bacteria. What were once thought of as anomalies, and non pathogenic, are now proving to be insidious, deadly, and nearly invisible. Hence the name of her text book: Stealth Pathogens (CRC Press). What are cell wall deficient bacteria? First lets review some basic microbiology. For decades students have been taught that there are three main types of bacteria, rods, spheres, and spirals. These shapes were maintained by a rigid cell wall that added structural integrity to the bacteria. Since human cells don't have cell walls, a good way to kill bacteria was to interrupt cell wall synthesis, because this would kill the bacteria, but not harm the human host. This is the basis of most bactericidal antibiotics like cephalosporins (Rocephin, Suprax, Ceftin, Claforan) and penicillins (amoxicillin, ampicillin). The problem is: What happens if there is no bacterial cell wall to inhibit?

When a bacteria like a spirochete loses its cell wall, it becomes incapable of holding its spiral shape. It becomes a sphere surrounded by a thin semi-permeable membrane. This round sphere is like the evil counterpart to the classical spiral form. Why evil? Well when the bacteria sheds its cell wall, it also sheds several proteins that are markers to the human immune system. In other words the immune system has trouble finding and recognizing the bacteria. Its almost like a criminal using disguises to change identities after each crime. Only this disguise is also bullet proof, because without a cell wall, antibiotics like Rocephin are useless.

"...these cell wall deficient forms (also know as L-forms) can be seen reverting back to the classical form."

What is also intriguing is the fact that these cell wall deficient forms (also known as L-forms) can be seen from time to time as reverting back to the classical form. This means the Lyme spirochete appears to be capable of turning off the genes that create cell wall when it is convenient to do so, and then the CWD form can then produce the classical spiral form when it needs to.* Does the bacteria do this to avoid antibiotic therapy? Probably not. It might be an evolved mechanism to dodge mammalian immune systems, but it is doubtful it has specifically evolved as a defense mechanism against antibiotics. Survival against antibiotics just happens to be a consequence of this particular evolutionary morphologic development. This appears to be borne out by some work done over sixty years ago on Syphilis patients by Warthin and Olson.

It was found that as you sectioned a blood vessel of a syphilis patient, you found a progression from the classical spiral form, to what appears to be the L-forms. As you entered the vessel wall, and continued to enter other tissues, the shape of the spirochete gradually changed from a spiral to a sphere. This means that the Lyme spirochete may also favor one form over another, depending on what tissue it is in at the time. This evolutionary strategy makes a lot of sense. If it can survive better in the tissues in a CWD form,

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Dave's Stuff, continued.

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from remote locations: telepathy? And extending that concept, how anyone would know what "many" think. And how many is many? Four or more I would presume by definition. I think what I wanted was a list of individual's names so that I could ask them in person via internet or phone just exactly what it was they thought, and just exactly how an "erroneous" determination of Lyme disease was made, and by whom, by name, and the results of the erroneous disease determinations in

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LETTERS, PERSONAL STORIES, SHORTS

Parade

The
color of
sunset pink
in the eye of
a peacock
strutting
the green
jeweled lawn
of an August
evening
is put on hold.

My
illness
remains as
invisible as
horse apples
splatting
onto
the tarmac
at a
New Year's
Day parade.

Can my
disease
be smelled,
heard,
tasted,
touched,
loved,
held?

D.B.

From a Newsgroup Friend:

I can only tell you what my family has been through , I hope it will be of some help. I have three children with Lyme. My oldest first had the rash at four . He was treated with amox. He is now 10 and going through a second round of bicillin shots. My second child was sick for a year before I could convince a Dr. to treat her for lyme. Her symptoms were mostly gastrointestinal. But she also had bad headaches and a bad neck. She was 6 at diagnosis. My youngest was sick at the same time but I had a hard time convincing the pediatrician. At three she began with amox.

At 10, 9, and 6 they are at present having bicillin shots once a week. This has begun because the two oldest relapsed in August. My 6 year old was ok on orals until the chronic earaches began in Aug. But the earaches came with exhaustion and some neurological symptoms as well. I don't know what the answer is I'm just taking a day at a time.

My Husband and I have both been on I.V. for more than 6 months. I've heard that there might be a reason not to use amox. because it doesn't kill the spirochete: it just forces the spirochete to bury itself in your body. (I don't know if this is true).

Katie

Thanks Katie! I wish all of our doctors knew more about effective and ineffective treatments.
D.B.

And Another Newsgroup (ng) Friend:

I found a Lyme Literate Doctor in southern California and will be seeing him next week. I do not know what I would have done if this group was not in existence. The media should spend more time discussing how the internet has allowed people to create support networks allowing information to be quickly disseminated. I had exhausted all my local resources but thankfully this ng made me aware of a LLMD who is recommended by the So Cal Lyme group and had Lyme in the family. I am hopeful that I will finally get help. It has been 3 years and 9 months and 23 MD's since I presented to my family doctor with classic cardiac symptoms.

Thanks, Mary

Good news of finding a knowledgeable MD is always good to hear!
Thank you, Mary. D.B.

SCI.MED.DISEASES.LYME

The Internet Newsgroup for Lyme disease is accessible no matter which service you are using for access to the World Wide Web. I've noticed people from Mexico, Brazil, China, France, England, and Holland posting to this site. Since it is accessible world-wide, the information exchange is wide-opened. And what you post is public. One can never tell who may be reading your posts. So keep that in mind should you choose to write something. Your insurance company may be reading what you write! Or maybe your Senators, or...the Pope.

Dave

Cell Wall Deficient Forms, Continued

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then the infection can continue even if its classical spiral counterpart is wiped out and eliminated from the blood stream. In the end the death of millions of bacteria is meaningless, if the infection is ultimately maintained somewhere else in the host.

Dr. Mattman said she frequently isolates L-forms from Lyme patients with aseptic meningitis, and endocarditis. How is this done? Traditional culture media is virtually worthless, as are traditional heat fixed blood smears. The answer is in many cases a simple technique that is rarely used any more in labs. A live wet mount is prepared using the patients blood or buffy coat. This is a simple procedure where the blood sample is placed on a wet slide with acrodine orange dye to stain the nucleic acids, and a monoclonal antibody fluorescent stain that is specific for Borrelia burgdorferi is added. Then the slide is examined under a microscope. Although this is a simple procedure that most labs could easily do; it is not being done. Why? Simply because most labs have no real understanding of CWD forms. Dr. Mattman also has a greater success with culturing the classical forms than most other researchers that I have met. Mostly this is due to her fifty years of experience with spirochetes, but it also has to do with economics. Dr. Mattman is a researcher, and as such, the priority of her lab is not to make money, but to produce data. As a result Dr. Mattman mixes her own culture media, which is considerably different from the commercially available medias. Since modern hospital labs have long stopped mixing their own medias (especially for a rarely requested test), the only medias which are ever used are those which are commercially marketed to the labs through medical suppliers. Since Dr. Mattman's media is not commercially available, labs will never have the success rate at culturing spirochetes that they should. Labs are in the business of making money, and mixing up media is too hard, too time consuming, and too costly. If it isn't on the shelf, it isn't being used!

"Simply because most labs have no real understanding of CWD forms."

More than likely Dr. Mattman's culture media will one day be commercially available, but its success has always depended on a couple of freshly made components, so bringing it to market isn't as easy as it sounds. Although there are better culture medias out there to detect Lyme disease than the commercially available preparations, it is the commercial availability of the other media that wins the day. Thus modified Kelly media and BSK-II are the current standards for culturing the Lyme spirochete.

Treatment: What does this new information on CWD Borrelia mean to chronic Lyme patients? After talking to a medical advisor to Dr. Mattman, a Dr. Steven Philips MD, he suggested that when a patient's therapy with a bactericidal antibiotic hits a plateau, that it may be time to switch to a different regimen of protein inhibitors, such as the combination of doxycycline, and Biaxin. These also appear to be the drugs of choice when a patient presents with symptoms of Multiple Sclerosis. These drugs do not depend on cell division and disruption of cell wall synthesis to kill the bacteria. Instead they affect bacterial metabolism through inhibition of protein synthesis.

Dr. Mattman made it very clear that a second spirochete

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Dave's Stuff... continued

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their individual lives.

One message poster indicated he had tried to find any of the patients from the NEMC study that resulted in the infamous publication of the "Lyme Disease is Overdiagnosed and Overtreated" article in JAMA in 1993, and could not find anyone at all. Was that really a study or just a records review? Well, yes indeed. It was just a records review of patients from about 1988 to 1993 referred to Dr. Steere's clinic. It was a retrospective case survey with analysis.

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(Continued from page 4) *Dave's Stuff...*

Allen Steere's more recently published activities are quite different. One abstract is: Med Clin North Am, 81 (1):179-194 (Jan 1997) "Diagnosis and treatment of Lyme arthritis," author Steere AC . Here's some of what he now says. "Joint involvement in this infection can usually be treated successfully with a 1- or 2-month course of oral doxycycline or amoxicillin, but patients with certain genetic and immune markers may have persistent arthritis despite treatment with oral or intravenous antibiotics. If patients have persistent arthritis despite a second course of antibiotics and if the results of PCR testing are negative, the author treats such patients with anti-inflammatory agents or arthroscopic synovectomy."

So what has changed? He is advocating antibiotics up to two months, a repeat course of antibiotics, and he is using PCR's. I'd call that progress.

One of the most asinine problems generated by that old article has been doctors I have encountered who point to the headline as the current diagnosis applied to all people who "think" they have Lyme. If you "think" you have lyme, you're nuts. They missed the small fact that 43 percent of the patients in the retrospective analysis did have Lyme disease, and about half of those still had active Lyme disease. And the diagnostic criteria applied is very very old by now. Some of it almost ten years old! So if you walk into your doctor or HMO's office, and they have an entire wall dedicated to clippings of newspaper articles that say "Lyme disease is Overdiagnosed and Overtreated," it could be that you are in trouble: irregardless of whether you've ever had any health problems in you life. An establishment that espouses this kind of bandwagon political use of medical science may have only one thing in mind: taking your money. Taking all of your money, if possible. And they don't care if they kill you along the way to do it! There are doctors out there who not only believe in euthanasia, but may have contracts with insurance companies because they are very good at practicing euthanasia. The criteria? Maybe they just don't like the color of your eyes. Bang, you're dead.

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Notes and Observations on CWD Forms, Continued.

has been implicated in causing MS. Her old mentor, Dr. Gabriel Steiner, first isolated spirochetes from MS lesions in 1918, and today the continuation of that work, is being pursued by at least three researchers. The suspected organism has been tentatively dubbed Spirochaeta myelophthora. Since Multiple Sclerosis is a collection of symptoms of an unknown cause, it is possible that more than one cause will eventually be found. One undeniable fact is that many Lyme patients have been previously diagnosed as having MS. Perhaps Dr. Mattman's continued work, will someday make that tragedy a rare occurrence!

Are CWD forms responsible for persistent chronic Lyme disease and negative tests? The possibility is quite real, but the answers will not be forth coming until more labs agree to test for CWD forms. For this to happen, the benefits of doing tests for CWD forms as a means to save money in patient care must become apparent. The cost effectiveness of routinely using this type of laboratory test would most certainly benefit both patients and health insurers. Development of a test that can be used by commercial laboratories is the next step.

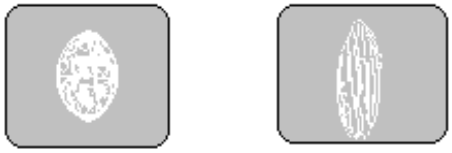
*As a side note: This process of reversion back to the classical form is a different process than the normal process of bacterial replication, which is binary fission. The usual process involves a cell wall separating the parent cell, thus creating a clone cell. This process does not occur in the Lyme spirochete when creating an L-form. This means we really don't understand the reproductive capabilities of this bacteria.

Thanks, Tom Grier, for allowing LymeSig to publish your notes and observations. I think that this area of research is very promising and deserving of funding. *D.B.*

THE HOST-PATHOGEN RELATIONSHIP OF THE HUMAN AND BORRELIA BURGDORFERI: PART TWO

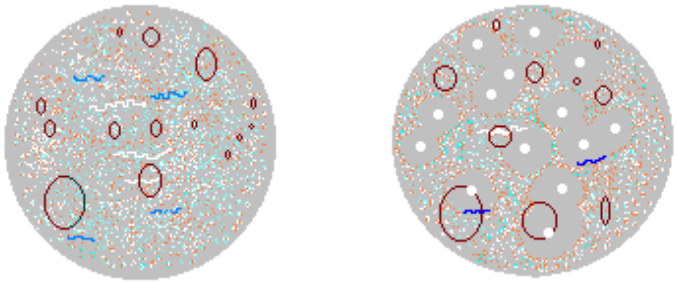
Bacterial Warfare

Lyme disease in the host does not exist by itself at all times. Simply because one has an infection with Borrelia burgdorferi does not mean other bacteria run away scared. On the contrary, they can take advantage of the Lyme disease victim because of the presence of Bb. An ENT doctor wrote about Bb causing the cilia to not function properly in the sinus, and remarked that getting the cilia to move was his approach to treating Lyme sinusitis. Of course it sounds helpful to me to do that: the adhesiveness of the colonization of the sinus by Bb has to be broken down by something. Sometimes, Ld patients have been noted to feel better after getting an infection of some other kind. I picked up a nice cocci infection in the sinuses from a friend who works at a hospice. Here is what a Cocci infection (not sure which: strept/staph/pneumono...someone died from it) does to a sinus colony of Borrelia burgdorferi.

1.  2.

Bar = 6mm

The above illustrations are the gross appearance of live sinus colonies formed by Bb. Both are white in gross appearance. Some bubbles, which I haven't mentioned before, are visible to the naked eye. The colony on the left (No. 1) is Bb without any additional infection. The colony on the right (No.2) is more flimsy. It has lost much of its elastic resistance; the bouncy and gummy-like resistance of the ovoid shape of colony number one . The colony at number two has been compromised by an infection with cocci. Here is the difference at 500 power magnification:

1.  2.

Bar = 64 microns

The round black/red circles in this illustration represent bubbles. Bb is shown in both blue and white. The matrix or gummy substance of the colony is represented by the various colored dots in both 1 and 2. In number 2, the cocci are round and white. And they are as obvious as they look in this illustration: they are

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LymeSig Admin Notes

LymeSig is all about Lyme disease. Opinions, personal commentary or stories, good ideas, latest information, reviews or articles are all welcome for publication.

Current Coordinator is:

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Membership/subscription rate: $9.00 per year.
Issues of Newsletter expected: 6 per year.

Current activities: Sharing through Newsletter and personal correspondences.

NEW: Lyme E-SIG - a closed/private list of e-mail addresses, updated irregularly<G>.

Accessibility: Write to Coordinator/call/or send email.

Note: about 20% of the membership is Non-Mensan.

Note: Where D.B. appears in the text of the newsletter, it is Dave Bartholomew who is also the editor/publisher of the Newsletter.

Wishing all the best,

D.B.

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Host Pathogen Relationships, *Cont.*

hard to miss because what they do is dissolve the matrix of the colony. Whatever proteinase or extracellular proteolytic enzyme this cocci is exhibiting by dissolving and clearing areas of the Bb colony may turn out to be useful in fighting Lyme disease. Indeed, work begun by Tillet in 1930 and 1933 (Journal of Experimental Medicine 52:561 and 58:485) culminated in finding a remarkable benefit in the use of streptokinase. Tillet, W.S., and Sherry.S., in Journal of Clincal Investigation 28:173, 1949, wrote about "The effect in patients of streptococcal fibrinolysin (streptokinase) and streptococcal desoxyribonuclease on fibrinous, purulent, and sanguineous pleural exudations," and etc. Streptokinase - Streptodornase (Varidase) was available as a jelly and as a powder for IV administration. Today, Kabikinase as Streptase are used for deep vein thrombosis. This, or something like this, could prove to be of value in the treatment of Lyme disease.

In the meantime, however, the cocci are using Bb to gain a foothold as an infection. By growing and multiplying on the already in place colony in the host, instead of host tissues, the host's immune reaction is evaded until significant numbers of cocci have developed. Bang; you've got a real head burner of a sinus infection. Did Bb get killed off by the cocci? No. It fled higher up into the frontal sinuses where all those lovely bubbles give you a wonderful sinus "pressure" headache. Enough years of this stuff and an MRI may show inflammatory changes in the mastoid area like one of mine did.

Other Directions

GOOD NEWS! Borrelia burgdorferi is the eleventh bacterium to have its entire genome mapped. Reported by NY Times and the Wall Street Journal, December 10 and 11, and published in the British Scientific journal Nature, December 11, 1997, there are 1,444,000 base pairs of DNA. And there are 853 genes on the main chromosome, and there are 430 plasmid genes. It is reported that Dr. Claire Fraser and the TIGR team of 38 scientists at the Institute for

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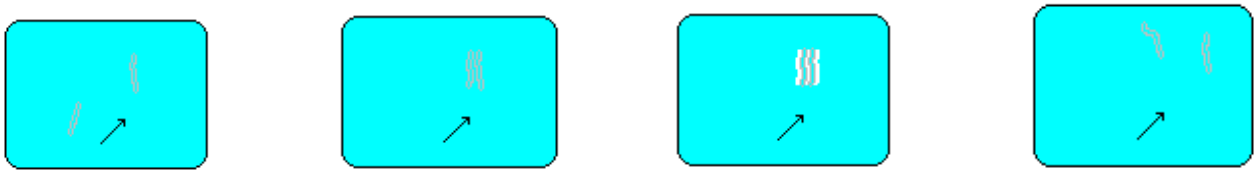
The Host-Pathogen Relationship , continued

Genomic research, which pioneered in this field in 1995, and other institutes, decoded the DNA and mapped the sequence in "a swift 18 months". According to Dr. Fraser, "Most bacteria have genomes in the form of a single circular chromosome. Borrelia's is very unusual because it has a single linear chromosome and numerous small strips of DNA know as plasmids. Exchange of plasmids is the usual way which bacteria transfer antibiotic resistance genes among one another. 59% of the 853 genes on Bb main chromosome and 16 percent of the 430 plasmid genes are familiar according to Fraser's team. Plasmids carry numerous genes for making lipoproteins, substances that form the bacterium's coat. The parasite has to survive attacks by the immune systems of all its different hosts, and may do so by rapidly switching between its repertoire of lipoprotein genes so as to change the composition of its coat. Borrelia also has many genes thought to be involved in responding to chemical cues in its environment." LymeNet Newsletter v5-n12 carries the news stories.

My thoughts are that spirochetes share plasmids through conjugation. On a live slide with environment controlled by low concentration of methylene blue used to slow the motion of the bacteria, two Bb more vigorous than others and about 18 microns in size approached one another in lumbering swimming motions showing use of only periplasmic flagella for motility. So for the moment, I'll leave you with a few frames from my memory bank of visual information: the ***C****onjugation of* ***S****pirochetes* as shown below.

Arrow = direction of drifting fluids of the prepared environment.



Phase One: approach and recognition.

Phase Two: alignment.

Phase Three: conjugation - the glow of exchanging plasmids.

Phase Four: separation.

D.B.

(Continued from page 5) ***Dave's Stuff, Continued.***

If you remember Marie Christine from Holland's personal letter from the July 97 issue, what is happening in Holland, the hopelessness of obtaining treatment for Lyme, is accented by a general awareness of what is happening in that country. The September 1997 Reader's Digest's article on euthanasia, "A License to Kill," paints a grim enough picture. Some selected quotes: "The Royal Dutch Medical Association officially endorsed euthanasia in 1984,.. In some cases, a patient's 'right to die' has become a duty to die,...In Holland, the key alternative to euthanasia - palliative care - is largely unavailable ... 'Unfortunately, the Dutch discovered euthanasia before they discovered palliative care' (Dr. Zylicz), ...only 3600 people died in 1995 as a result of assisted suicide or euthanasia... this only included cases where the patient requested death... The survey did not count as euthanasia or physician-assisted suicide the 900 cases in which patients' lives were ended without their request, and nearly 1900 deaths in which doctors increased painkilling drugs with the explicit intention of hastening death. 'The Netherlands has moved from euthanasia for the terminally ill to euthanasia for the chronically ill,... from voluntary to involuntary euthanasia,'(Dr. Hendin/USA)."

So... how well do you know *your* doctor? **D.B.**