

Lyme Disease Is Sexually Transmitted - Reactivated By Aspartame

Lyme Disease Is Sexually Transmitted, Produces Autoimmune Self

Destruction Which Is Reactivated by Aspartame

By James Bowen, M.D.

12-4-00

Lyme Disease and Aspartame Disease are tragically conjoined Twins. Aspartame can cause Lyme disease and the Lyme treponema can cause the same hyperautoimmunity and resultant hyperautoimmunity destructions that aspartame does. American medicine unfortunately overlooks the basics that have long been known about Lyme Disease.

Aspartame can activate Lyme Disease in people who have the infection but would not experience Lyme Disease because unimpaired by the ill effects of aspartame the Lyme treponema would without hazard be eliminated by a competent immune response. In addition, I think those who have had Lyme Disease and achieved a "cure" may experience a relapse upon exposure to aspartame or other sensitizing agents even though the Lyme treponema has been eliminated from their body.

Lyme Disease has been known under other names in the British Isles for about a hundred years. The British and continental experience could also serve well as a learning model in the US. The other reason that an apparent lack of understanding exists on these topics in the US is that the US has defacto, virtual full control of the press by the government and the establishment to protect the undefendable Aspartame in spite of constitutional provisions to the contrary. Whether with respect to Aspartame Disease or Lyme Disease "hypersensitivity" and hyperautoimmunity can be used interchangeably to describe the particular immunologic disorder engendered in either case whereby the human immune system is left so impaired that it can readily be stimulated to a severe autoimmune attack on the human organism itself: "hyperautoimmunity". One of aspartame's hyperautoimmunity damages is chemical hypersensitivity, poly or multiple chemical sensitivity syndrome, "aroma sensitivity" etc.

To save words this article will use hyperautoimmunity to denote disease and pathology caused by autoimmune attack deriving from hypersensitivity/hyperautoimmunity. The common ground/common immunologic event shared by aspartame and Lyme Disease is that the hypersensitivity that is induced is largely caused by denatured human protein interacting with the human immune system in either case. This leads to striking interactivity between the two diseases on one hand and similar therapeutic hardships for the afflicted patient on the other. It is about equally hard to find a competent medical caregiver for either condition in the US because the available information just isn't put to the attention of most physicians in a credible manner. To treat either condition effectively requires a large measure of courage as well as independent expertise even though the treatments are logical, simple, safe and avail the patient immense benefit.

It seems quite overlooked that the hyperautoimmunity stimulated by the treponema and the resulting hyperautoimmunity are the major cause of the various symptoms of Lyme Disease. This explains why, what usually might be considered an adequate antimicrobial approach for more straight forward infectious processes is found to be inadequate for Lyme Disease. It can also explain why that from the earliest experiences with Lyme Disease in the US until the present time that the patients most grievously afflicted by Lyme Disease and who are urgently in need of treatment for it are highly likely to be serologically negative and test negative for Lyme Disease. Experienced centers that treat significant volumes of Lyme disease cases have coined this phenomenon "sero negative Lyme disease" because a majority of the patients most grievously afflicted by Lyme disease are indeed sero negative.

One such clinic performed a follow through search for live organisms on their cases and were able to culture Lyme treponema in 91% of sero negatives. Remarkable confirmation because isolating the organism is a highly technical task.

Three known biological mechanisms explain sero negativity in active Lyme disease.

First: Since hypersensitivity/hyper autoimmunity is the pathophysiologic mechanism the damages can be produced rapidly and in response to a minuscule inoculum. Second: Hypersensitivity results from production of abnormal amounts of abnormal IGG which forms an "IGG blockade" to sero positivity.

Third: The highly pleomorphic profile of the Lyme surface antigens can totally omit various antigens. For example, the immunologically dominant and often tested for Osp A has been found to be persistently lacking in some regional phases of treponemae. If your immune system can mount an appropriate and adequate response, you may test positive and be able to eliminate the disease without damages and the disease will often be self limiting; completely cured without antimicrobial therapy of any kind. If you lack that kind of immunocompetence you likely will not produce a positive titer in any case and your immune system may be diverted to attacking your own body with autoimmune destruction while not affecting the Lyme treponema at all.

The hyperautoimmunity engendered by Aspartame and/or Lyme Disease is probably the "blocking factor" that immunologists are looking for to explain why serologic Lyme Disease testing often does not work. Thus, for many people with negative Lyme titers, it is a devastating disease with intolerable consequences arising from its not being vigorously and thoroughly treated. Of the 53 laboratory tests currently available, none yield accurate negative results. Lyme therapy experts can only say that hopefully we will have therapeutically significant testing available in the future but that at present we simply do not.

The destruction arising from leaving undetected Lyme Disease untreated may be immediately evident or may occur in the near or distant future as is also true of its close cousin syphilis. Yes, Lyme Disease can be spread venereally and in several other ways. So a "bite" may never have occurred and the classic "erythema migrans" rash may never be observed. In the long term, how does and how can a miniscule and fragile micro-organism like the Lyme spirochete survive the attack of the human immune system? The spirochete's microscopic, near bacterial size and wormlike proportions with relatively large surface area should make it readily subject to immune destruction after the 10-60 days or so it usually takes for the immune system to mount an adequate response to a new foreign protein.

Being a matador is a good analog to the "bait and switch" games the Lyme spirochete plays with the immune system to prevent an appropriate immune response from destroying it. The bull fighter would be quickly destroyed if the bull could simply get a horn in him and remain unrestrained to finish the job. The matador achieves mastery of the situation by inciting the bull to charge him and then by avoiding bodily contact, changing the bull's charge into a near miss which only wears the bull down leading to more and more destruction of the bull. The matador also has a red flag that he can manipulate with various wiggles and waves to further confuse and disorientate the bull and engage the bull in self destructive charges.

Because of their small size and shape and mobility the treponemae cannot depend on thick cuticles, secretions of defensive mucoid shields, or encapsulating themselves as other larger parasitic organisms do, to protect themselves. They would be completely destroyed by any competent immune attack. The treponema much like the matador can accomplish only avoidance. They use two (2) mechanisms; "game playing" and being "fast on their feet". They play the game of "let's you and him fight" with the human immune system and body, getting the body itself to be the focus of the immune attack rather than the treponemae. It accomplishes this by making the major known immunologically dominant constant component of its surface a human protein, only slightly denatured called Osp A. Osp A is nearly identical to a human protein called LFA-1. The very small difference is just enough to elicit immune system response with destruction of the treponemae in the immunocompetent but eliciting hyper auto immunity in those with lesser immune competence in this regards. Aspartame likewise creates denatured human proteins of the body's own tissues with no healthy alternative insofar as hypersensitivity is concerned.

Lyme vaccines, presently available, are based on Osp A and it is stated the immunoglobulins produced enter the tick's digestive tract as it bites thus destroying the Lyme organisms before they can ever reach the human body. Not surprisingly, some people have accused the Osp A vaccines of having caused severe knee damage by stimulating destructive arthritis. This correlates well with the fact that Lyme arthritis almost invariably affects the knees but other joints with less frequency. This pattern reflects the tremendous physical stress imposed on the knees inherent to knee kinesiology. Osp A is considered an "arthrogenic antigen".

The immune difficulties are further complicated by the fact that the spirochete can constantly keep changing which genetic information it expresses in its surface proteins. This "gene surfing" is very analogous to the matador confusing and agitating the bull with his red flag. Even as the human immune system may attempt to self correct, different antigenic pictures demanding immediate destruction are presented on the organism's surface - again and again - faster than the immune system can mount an effective response against it. Thus in the less immuno-competent the human body itself becomes the only readily and constantly available target for immune attack and destruction.

A comparable example is the situation with "flu" vaccines. If the flu virus strain mutates, even slightly, the antibodies elicited by the vaccine just aren't effective against the flu bug. Lyme Disease damages and some of aspartame's damages are hyperautoimmunity destruction based on inappropriate immune response to denatured human protein.

It is no surprise then the two diseases can, and often do, produce identical problems. It should likewise be possible, once a pattern of autoimmune destruction has been established in either case, that the persistent hyperautoimmunity (after the situation has been quieted down) will produce the same disease pattern as at least part of the response when hyperautoimmunity is reactivated by either agent. Exposure to aspartame can cause the Lyme disease process to recur after the Lyme organism has been eliminated from the body. Likewise the Lyme organism can cause recurrence of the hyperautoimmune destruction caused by aspartame such as the Persian Gulf Syndrome and the others already mentioned.

The chemical hyper reactivity engendered by either disease can yield recurrences of either upon exposure to other noxious chemicals at levels undetectable to "normal" or unaffected individuals. Therefore, in those already immunologically deranged by aspartame, Lyme Disease will often be atypical: lacking the usual 10 to 14 day incubation period etc because immediate autoimmune hyper reactivity already exists and is already subject to an immediately fulminant and virulent response to very low doses of the treponemal antigen.

This mutual synergism/activation phenomena between aspartame poisoning and Lyme Disease persists so that the activation of Lyme destruction is possible at almost anytime amongst the large segment of our population sensitized by aspartame exposure. Even pollen seasons and fungal blooms with airborne spores now are problems of severe hyperautoimmunity for the hypersensitized and can be expected to produce full blown autoimmune destructive processes without treponemal reinfection nor exposure to aspartame itself.

This ill considered knowledge is not new to medicine. One classic medical case of destructive hyperautoimmunity is Lupus Erythematosus known to be stimulated to reoccur upon exposure to various chemicals, many of them so innocuous as to be included amongst commonly used medicines.

The need for higher doses of properly selected antibiotics used for a much longer term than in most infections reflect two aspects of Lyme infection. The treponemae are somewhat larger and more complex organisms than most pathogenic bacteria and are thus harder to eliminate for that reason alone. Moreover, an appropriate immune response is an essential component of the successful treatment of any infection. Without it there is little hope of cure. This brings us back to the Lyme "matador" and its "switch and bait" defense and its fast footed "antigen surfing" to further disrupt immunologic competence. This antigenic "channel surfing" can completely prevent the immune system from destroying the treponema on one hand while continuing to promote aggravated hyperautoimmunologic damages on the other.

In addition to the usual anti microbial actions, the high dose long term antibiotics needed appear to assist the immune system with two (2) important mechanisms. The first as is stated by some experts is that it "roughs up" the treponemal surface allowing the immune system a better chance to differentiate Osp A from human antigens and focus an immune attack on it since the human cells are more resistant to damage from the appropriate antimicrobial agents. Secondly by inhibiting and slowing treponemal metabolic processes it can slow down the "mutation" of surface genetic expression so the immune system can "catch up" and properly identify the pathogen for destruction and in conjunction with the antibiotic eliminate the treponemae. Since the treponemae are independently of each other "mutating" their expressed surface antigens it only makes sense that it will take some time for the immune system to catch up to all their various expressed forms and eliminate them all.

In all hyperautoimmunity diseases, cure depends on avoidance of the inciting stimuli as one of the keystones of achieving a measure of good health. In Lyme Disease, that includes successfully eradicating of Lyme organism and avoiding the other mentioned immunologic stimuli. This explains much of the confusion surrounding the clinical response. Some patients require prolonged antibiotics but get well only after the antibiotics are stopped. Very likely the antibiotic itself or some other substance given with it such as a preservative dye or capsule coating, ie methyl cellulose, was keeping the hyperautoimmunity fully activated. Most experts who regularly treat recurrent Lyme Disease now prefer a 60 day antibiotic regimen.

The picture is further complicated by governmental bureaucracy which often requires a positive Lyme titer prior to treatment as a "community standard of practice". This is highly dangerous to those afflicted with Lyme Disease for several reasons

1. The titer is negative in two thirds of cases of active Lyme Disease.
2. Even a larger percentage of cases are negative after antibiotic administration.
3. Active Lyme cases who have ever once had a positive response to antibiotic therapy almost never exhibit a positive titer thereafter.
4. The worst cases of Lyme Disease most frequently do not have a positive titer.
5. At best the titer will not turn positive for 10-60 days which is too late for those already having pre-existent autoimmunity - pre-existing hyperautoimmunity.

The Lyme sufferer must therefore quickly find a physician who is knowledgeable of Lyme Disease and its treatment (rare) and rarer still possessed of the courage to defy bureauacy and proceed with adequate therapy! Even more rare would be to find such a physician also possessed of knowledge of hyperautoimmunity chemical hypersensitivity and aspartame toxicity.

The need for immunotherapy may vary and techniques are varied. A universally applicable one is to maintain a proper mineral balance for immune system function. I prefer kelp selenium - 200 mcg per day because in addition to selenium it contains copper and a whole host of trace minerals from the sea. Sea Sel is one brand with which I am familiar.

A case to illustrate the above follows: The subject is a 61 year old male, retired physician and patient who had previously been poisoned by aspartame; low calorie Kool-Aid in 1983. The problems encountered following the original episode included a toxic cardiomyopathy, classic symptoms of methyl alcohol poisoning, depression and Lou Gehrig's symptoms which cleared fairly well after discontinuing aspartame. He was left with striking hypersensitivity and hyperautoimmunity. Typical of chemical hypersensitivity, the patient was otherwise free of symptoms when in pristine environments and thus would be relatively non-reactive to an infrequent inadvertent exposure. If the the hypersensitivity was flared by other exposures eg aspartame, it could cause violent pathologic reactions to even a minimal subsequent chemical stimulus. His reactions included everything commonly associated with hypersensitivity eg diabetes, neurodenenerative disease or any allergic or auto immuno phenomena depending on the inciting stimulus and the status of his hyper autoimmunity at the moment. Sounds confusing to some, but a situation well known to those so afflicted and physicians who care for them. As experienced allergists say "in the hypersensitive individual 'allergy' can produce any symptoms of any disease process in any system in the body".

The subject was selected by two ticks as dinner while walking across a rest area in Lincoln, Nebraska in August 1995. The ticks, undetected by him, attached themselves to the back of one of his knees. The pain was soon noticeable and at the end of his shift his wife noticed the ticks and removed them. The atypical local reactions continued to be extreme, with painful swelling and reddening. Flu like symptoms with fatigue, joint pains, muscle aches and headache rapidly ensued - again an atypical immediate response due to this aspartame induced hypersensitivity. The symptoms increased in severity over the next 36 hours until his arrival in Portland, Oregon, where the subject presented to the Veterans' Administration Emergency Room with meningismus in addition to the other findings. He was treated for Lyme Disease with Doxycycline, 100 mg twice daily for 14 days (most experts would give Doxycycline for 20-30 days at this juncture and for a 260 lb man, 100 mg dosage twice daily is a questionably inadequate dosage).

A Lyme titer was negative at that time. The response was very beneficial and the subject took no further thought about the Lyme episode after this. Over the ensuing years, the chemical hypersensitivity flare ups progressively worsened: arthritis (especially in the knees) as well as various neurological sequelae and dermatologic manifestations etc. When in contaminated environments his

blood sugars became progressively elevated but fell to normal when in pristine environments, only to again elevate and require vigorous insulin and oral agent treatments to control them when chemical exposures occurred.

By late 1999 the arthritis took a turn for the worse and "joint mice" manifested themselves in both knees. These are osteocartilaginous loose bodies broken free from the articular surfaces that can slip in and out between the knee joint and the bursae under the skin at times. When in the joints, these were quite damaging and painful. When the subject went to the VA Emergency Room he was belittled by being offered only psychiatric care even though he had properly and efficiently explained the meaning of all terms used. All competent medical personnel should be able to understand the term "joint mice" and shouldn't have to have it explained but, in this case, even explanations couldn't avoid an attack on his sanity, in spite of the fact these erosive processes are classical findings of knee arthritis from recurrent Lyme disease and the patient had previously been treated in that same emergency room for Lyme symptoms from tick bites. This was only one of several such denials of real medical care and attempts at intimidation this doctor was subjected to for blowing the whistle on aspartame.

This bold denial of any real therapy was contrary to the specifications by the Lyme Disease Foundation and the CDC (Centers For Disease Control) that Lyme symptoms must be treated because of the tragic results of leaving them untreated. The knees needless to say, thanks partly to their diligent neglect continued to worsen. By Spring 2000, the now chronically stimulated hyper auto immunity/chemical hypersensitivity had so worsened that a brief Spring pollen bloom caused a devastating "flu" episode.

The diabetes blood picture usually resolved in the summer in Portland when the pollen and fungal spore blooms were past and the weather was dry and warm and the severe industrial pollution was relieved because the inversion layer effects in the Willamette Valley had cleared allowing the atmospheric pollutants to be rapidly carried away. This would usually allow the discontinuation of all hypoglycemic agents for the summer - not so for the summer of 2000. The blood sugar picture worsened.

Other symptoms rapidly ensued. His knees became severely disabled. Then the left ankle turned to "mush" and lost ligamentous integrity. Other joints began at times to show arthritic inflammation, tenosynovitis of the shoulders occurred. Synovitis of the neck became a permanent feature. In recurrent Lyme Disease this occurs in continuity with an autoimmune cervical meningitis. The subject who never bruised at insulin injection sites began to show strikingly symmetrical bruising in neat circular patterns centered around each and every injection site. Polymyalgia and fibromyalgia symptoms ensued. Then extreme weakness and fatigue was accompanied by cranial and upper cervical nerve problems with partial numbness of the right side of the face and partial facial nerve paralysis of the left nares with dilation and fasciculation so rapid and persistent that the subject felt compelled to check his pulse to make sure this wasn't an aneurysmic phenomenon. The check revealed the nasal fasciculations were just that and didn't coincide in any way with pulse rate, rhythm or timing.

Carefully reviewing his own medical history for a clue (his physicians at the VA had not) revealed he had almost every symptom of recurrent Lyme Disease. This included, by now, various types of radiculo neuropathies throughout his body but particularly striking from the cervical nerve roots. His neural paralysis of the right chest from an episode of the plague contracted while medically serving an orphanage in Vietnam in 1968 worsened to the point he was experiencing severe right shoulder pain, weakness and trouble with his right hand control. His previous experience with the apparently poorly trained and possibly improperly motivated personnel at the Portland VA ER led the subject to go to the public library and on the internet to do a ten year review of the medical literature on Lyme disease, Ehrlichiosis and related topics. A few hours well spent before his futile visit to the Portland VA ER where he was denied treatment of any kind on the basis that "they wouldn't treat Lyme Disease there" capped off with the lie they couldn't draw a Lymes titer there - both untrue and irrelevant to the subject's misery state and highly damaging disease status.

Going back to his medical cabinet, untreated by the VA, he luckily found a supply of Doxycycline tablets unused from a previous facial injury and was able to take them 200 mg twice/day for 5 days until his scheduled urgent care visit at the VA. On Doxycycline, the blood sugar levels dramatically dropped to normal. The bruising and platelet difficulties quickly resolved, the arthritis improved incrementally day by day until almost his usual functional level for the first time in months. The polymyalgia and cervical synovitis cleared dramatically. The facial and cranial nerve problems resolved, the fatigue lifted. During the 5-6 day period until his appointment he was inadvertently away from the Doxycycline for one day and Lyme symptoms began to relapse while he was unexpectedly caught out of town on a trip.

This case history gives a striking picture:

1. getting virtually all the findings of recurrent Lyme Disease;
2. the successful treatment by Doxycycline;
3. the temporary relapse whilst off Doxycycline;
4. the complete resolution in response to the use of the high dose Doxycycline and the greatly improved status of the subject at the visit.

This was the best, most objective information on the subject's condition and needs that the VA physicians would ever have. Instead of treating the patient the VA physician gave the subject a stern lecture about treating himself - totally ignoring his interim misery and pathology - only ordering a Lyme titer and refusing to give any other treatment.

The subject's regular VA clinic physician also refused to see him until January 2001, again boldly defying CDC regulations. The subject was off Doxycycline for about a week until he could arrange for help from better medical caregivers during which time all of the symptoms, except the facial and cranial nerve problems recurred. Belatedly back on Doxycycline, the problems began again to resolve somewhat but much more slowly. No competent or caring physician would ever recommend interrupting partially completed successful therapy of a complicated infectious problem nor conceive of allowing immunologic reflare of a destructive

hyperautoimmune process as the VA doctors did. The botched therapeutic regimen was not as rapidly effective now. The structural physical damage to the neck, knees, ankles and peripheral nerves were allowed to progress unabated due to the diligent neglect by the VA physicians and so far that is not promising happy results. This unfortunate scenario and the associated Lyme literature research have served as the inspirations for this article to illustrate some of the problems generated in our medical care systems by its unwillingness to factor in the tremendous damages from aspartame on a worldwide basis.

Only acknowledgement of such damage would allow aspartame sufferers to get adequate treatment and avoid tremendous damages to themselves as well as to the financial structure of our medical care and compensation/pension systems. Juvenile rheumatoid arthritis is a classic case of destructive hyperautoimmune disease: some cases even require the ultimate treatment of hyper auto immunicity - immune ablation with chemotherapy and irradiation followed by stem cell transplantation. The strong ties sometimes discovered between this disease and Lyme Disease only serve to emphasize the auto immune nature of the destructive processes of Lyme Disease.

The name Lyme Disease comes from an episode in the Lyme County area of Connecticut when physicians investigating a cluster outbreak of juvenile rheumatoid arthritis in the region discovered tick bites as a common factor in all cases and conducted an epidemiological search for a causative agent and identified the Lyme treponema as a possible agent. This unfortunately led to a "tunnel vision" approach focussing on Lyme Disease as only a typical infectious disease which firstly ignored that juvenile rheumatoid arthritis is a very destructive hyper autoimmunicity disease. The hyper autoimmunicity involved is a key to adequate understanding of the nature and therapy of Lyme Disease. Secondly, the excellent information to be gleaned from the British and European experience with the treponemae and their treatment were and are by and large ignored. Thus pseudo scientific approaches treating the very fallible lab tests instead of the very sick patients have often gained the uppermost in physicians' minds with disastrous results for the patients.

The cardiac conduction system and the cardiac muscle are afflicted by both aspartame and Lyme Disease. In Europe empiric pre surgical treatment of dilated cardiomyopathy with antibiotic regimen for Lyme Disease has in many instances resolved the problems without surgery. The single largest category of patients awaiting cardiac transplantation in the US relates to patients with dilated cardiomyopathy. Just think of the possibility of avoiding many of those procedures if the issues of possible Lyme etiology and Aspartame Disease are fully addressed in these cases. Other issues arising out of aspartame toxicity are similarly expensive. Over 10 years ago, Dr Hyman Roberts, a West Palm Beach Board Certified Internist identified cases that wasted over \$60,000 on unnecessary lab and medical diagnostic procedures when aspartame ingestion was their only correctible medical problem.

James Bowen, M.D. c/o 1720 North Watts Portland, Oregon 97217 November 2000

The following references were used in research of this article. (For more information on aspartame see www.dorway.com and the Aspartame Toxicity Center, www.holisticmed.com/aspartame)

1. Oral Doxycycline For Facial Palsy Related to Lyme Disease, American Family Physician, June 99, Vol 59, Issue 11, p323, Kirchner, Jeffrey T.
2. The Role of Genetic Factors In Autoimmune Disease: Implications for Environmental Research, Environmental Health Perspective Supplements, Oct 99, Vol 107 Issue 5, p693, 8 p, 4 charts, 2 diagrams, 1 graph, Cooper, Miller, Glinda S.
3. Lyme Borreliosis: Basic Science and Clinical Aspects, Lancet, 4/23/94, Vol 343, Issue 8904, p1013, 4p, 3 diagrams, 4c, Pfister, Hans-Walter, Wilske, Bettina
4. The BDR Gene Families Of The Lyme Disease And Relapsing Fever Spirochetes: Potential Influence On Biology, Pathogenesis, and Evolution, Emerging Infectious Diseases, Mar/Apr 2000, Vol 6 Issue 2, p110, 13p, 2 diagrams, 2bw, Roberts, David M.; Carolyn, Jason A.; Theisen, Michael, Marconi, Richard T.
5. Identification of LFA-1 As A Candidate Autoantigen In Treatment-Resistant Lyme Arthritis, Pediatrics, Part 2 of 2, Vol 104 Issue 2, p405, 2p, Gern, James E.
6. Arthritis, FDA Consumer, May/June 2000, Vol 34, Issue 3, p27, 6p, 1 diagram, 2bw, Lewis, Carol
7. Differences Are Voiced By Two Lyme Camps At A Connecticut Public Hearing On Insurance Coverage Of Lyme Disease, Pediatrics, Apr 2000 Part 1 of 2, Vol 105 Issue 4, p855, 3p, Feder Jr., Henry M.
8. Lyme Disease Is Frequently Misdiagnosed, Modern Medicine, Sept 95, Vol 63 Issue 9, p 17, 2p, 2c, Feder, M.D., Henry M, Hunt, M.D., Margaret
9. Lyme Disease In The United Kingdom, BMJ British Medical Journal, 2/4/95, Vol 310 Issue 6975, p303, 6p, 4 charts, 7c, O'Connell, Susan
10. Lyme Disease May Lead To Autoimmune Disease, World Disease Weekly Plus, 9/28/98, p15, 2p, by Sandra W. Key, News Editor with Daniel J. DeNoon & Salynn Boyles
11. Juvenile Chronic Arthritis, Lancet, 3/28/98, Vol 351 Issue 9107, p969, 5p, 2 charts, 2c, 1bw, Woo, P.; Wedderburn, L.R.
12. Possible Cause Found For Lyme Arthritis, Science 7/31/98, Vol 281

Issue 5377, p631, 2p, 1c, Dickman, Steven

13. Treatment-Resistant Lyme Arthritis May Be Autoimmune Disease, Lancet
8/1/98, Vol 352, Issue 9125, p375, 1/3p, Morris, Kelly

14. Getting Lyme Disease To Take A Hike, FDA Consumer, Jun 94, Vol 28
Issue 5, p5, 4p, 1c, Lewis, Ricks

15. Lyme Disease: Frequently Asked Questions, Lyme Disease Foundation,
Brochure 1995