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Stealth Organisms and the link to Chronic Fatigue Syndrome

Jean A Monro - Medical Director Breakspear Hospital

We began calling these cell-wall-deficient organisms 'stealth organisms' because their presence is difficult to detect and the damage they can cause to the human body is extensive. At Breakspear Hospital, we have investigated a group of patients with arthritides, such as rheumatoid arthritis, and discovered a link to these stealth organisms.

Classically bacteria have been stereotyped into bacilli, which are small sausage-shaped organisms or cocci that are rounded bodies or sinuous, worm-shaped organisms. However, there are many that are not typical and these types contain less of the rigid wall components and the shapes, which result from diminution or complete absence of the wall, are almost endlessly varied. There are some species of these organisms that are particularly likely to be cell wall-deficient forms.

At Breakspear, we have been scrutinising the particular tests and treatments for Borrelia, also known as Lyme disease, and there follows an account of our discoveries.

Borreliosis linked to Chronic Fatigue Syndrome

Borreliosis (also known as Lyme disease) is an illness that occurs as a result of an infection with an organism called Borrelia burgdorferi. This is inoculated into the person by a tick or other blood-feeding insect and the host person may develop a resulting skin rash. Later a chronic rash can occur, with fever, headache and pain in the muscles and joints. Also, neurological abnormalities may occur, sometimes with neuritis (inflammation of a peripheral nerve) or occasional heart conduction problems.

Most cases of borreliosis have occurred in areas where ticks are commonly found such as parts of North America, or in the United Kingdom where deer have been carrying the infected ticks. Ticks attach themselves to host animals that brush against the tips of grasses, bracken and shrubs or other animal hosts. They feed on blood by inserting their mouth parts into the skin of the host animal. Ticks are slow feeders and as they feed, their bodies slowly enlarge and then they usually become visible on the surface of the skin. Obviously it is best that everyone avoid being bitten by ticks by taking precautions before travelling in grassy or forested areas and taking extra precautions in areas where it has been documented that there are infected ticks.

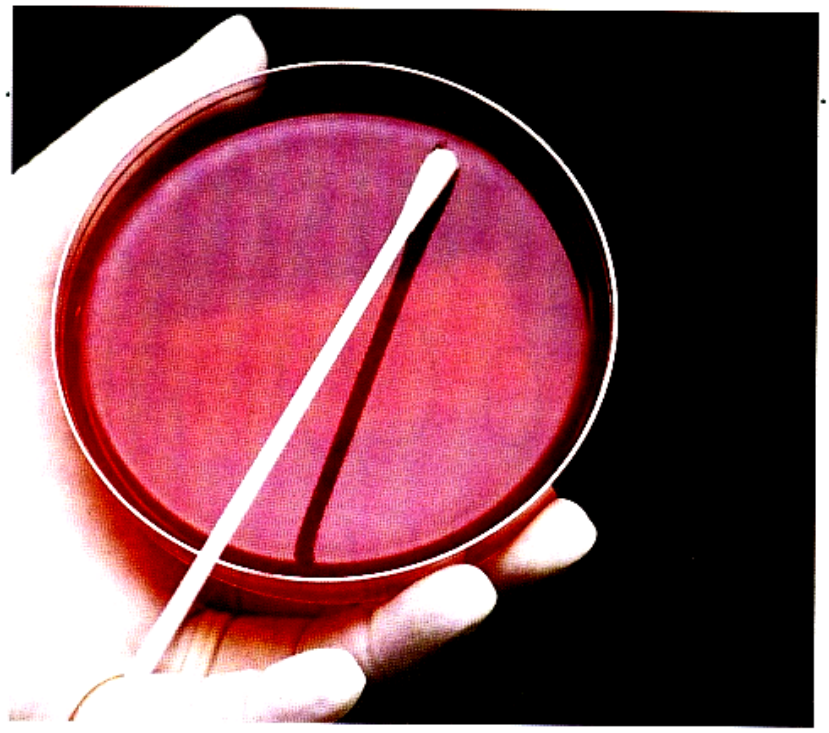
But not everyone notices having been bitten because the tick can be as small as a pinhead. Many people forget that they have ever been bitten. At Breakspear, we would prefer to test all chronic fatigue syndrome patients for Lyme disease because of the strong evidence to suggest a link between the two.

The standard investigations for borreliosis that we perform are:

- Borrelia antibody evaluation by ELISA technique, which measures antibodies to the organism. The results may be sero-negative, sero-equivocal or sero-positive.
- Polymerase Chain Reaction test for Borrelia burgdorferi, which measures the presence of the DNA – the chromosomes of the organism from the patient. This is negative in most people.

Further tests are:

- Lymphocyte Transformation Test for Borrelia burgdorferi (LTT MELISA), which, if the results are positive, demonstrates current active infection with the organism. This test improves laboratory diagnosis of Borrelia burgdorferi by confirming an active infection in the sero-negative, sero-ambiguous or sero-positive patients with or without clinical suspicion of Borrelia burgdorferi and provides an early marker for successful antibiotic therapy.
- Borrelia burgdorferi IgG and IgM antibody evaluation by the



Immunoblot/Western Blot technique, which detects portions of the Lyme disease organism (Borrelia specific antigens) by a response of lymphocytes to these fragments. This is a standard confirmatory test for positive or equivocal ELISA results. It is also an optional supplementary test for negative ELISA results from patients with clinical suspicion of borreliosis.

• Bowen test, which provides rapid identification of Borrelia burgdorferi (RIBb) and is a research test being undertaken in a laboratory in the United States.

Amongst Breakspear patients, all those who have undertaken the Bowen (RIBb) test have shown positive, despite the fact that many of the other tests have been negative. This may reflect the fact that these stealth organisms are concealed and difficult to identify. It may be, however, as some pathologists have implied, that the test only needs to be undertaken as a research test and corroborated by other investigations.

To treat borreliosis, we have been favouring the use of third generation cephalosporins. These, given intravenously, have proved to be very effective for some patients. The programme that has been adopted for different groups of patients with other antibiotic treatment has been adapted from the Lancet. This programme targets different conditions with different antibiotics, over varying time periods. For example, erythema migrans and borrelial lymphocytoma (flitting rash) may be treated with oral doxycycline for 10-21 days and neuroborreliosis (affecting the brain) by oral doxycycline for 14-30 days.

As follow on treatment, we have been considering the use of metronidazole (Flagyl) and/or intramuscular penicillin to follow a course of intravenous therapy to get rid of encysted forms.

One of the several potential reasons for antibiotic treatment failure is persistence of borrelia organisms in the tissues, where they can remain, even after recommended treatment. Some post infection syndromes, such as fibromyalgia (a condition in which there are knots in the connective tissue in muscles), can persist in the absence of the live spirochaetes and not respond to antibiotics. Sometimes treatment failure is due to irreversible tissue damage caused by the borrelian infection. Sometimes patients develop sensitivities, which focus on the injured area.

There have been reports that other oral agents to treat borreliosis are available, such as Cat's claw (Uncaria tomentosa). Our current information about this plant is that it is a mild antibiotic and can be an antiviral. There are components in Cat's claw which are steroid-like, and it has been reported that the resumption of symptoms after stopping taking it may be due to steroid withdrawal. We could use Cat's claw for patients as an adjunctive treatment. If the steroid effect allows reduction in inflammation, then the antibiotics may be better able to get to the organisms buried in the tissue.

Each patient needs to discuss the investigation and treatment programme suggested for that individual.

Stealth Organisms Involvement *in* Other Illnesses

Aside from the link between borreliosis and chronic fatigue syndrome, there are many other illnesses that may be caused by other stealth organisms. For example, it is possible that parasites may, in some cases, be responsible for infecting joints. In a large group of people who have rheumatoid arthritis affecting the temporomandibular joints, where these joints had been removed surgically, the tissues were found to be infected with organisms such as Chlamydia (a parasite) and Mycoplasma (a bacterium without a cell wall). Rickettsiae have also been suggested as infecting organisms. These are all difficult to identify in sufferers.

The first step in fighting the stealth organisms is to recognise their presence and then treatment may commence. At Breakspear, we search for Lyme borreliosis, Chlamydia trachomatis, Chlamydia psittaci, Mycoplasma fermentans, Mycoplasma genitalium and Mycoplasma pneumoniae. We have found a large percentage of screened patients have raised antibody levels in saliva and blood to many of these organisms. Currently we are treating patients with antibiotic therapy or immunotherapy. For more information on the various illnesses caused by these stealth organisms, contact Breakspear Hospital directly.

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