

## The case for more research into tick borne illnesses.

### A personal view by Dr. D C Owen

Lyme disease is rarely mentioned in main stream medical journals. When a recent article was published in the BMJ it referred to Lyme disease as "A simple infection carried by ticks". *Borrelia burgdorferi* is in fact one of the most complex bacterial pathogens known and as such would not be expected to cause a simple infection. This fact alone should stimulate more research into Lyme disease.

Reported cases of Lyme disease are increasing in the UK and abroad but the prevalence of Lyme disease and other tick borne infections remains unknown. Nor is the true scale of the public health burden of tick borne illnesses known but evidence is mounting that Lyme disease is a complex under-diagnosed condition which can become chronic and virtually untreatable in some patients.

Tick borne illnesses can present in a multitude of ways and apart from early cases presenting as Erythema Migrans, Lyme disease does not follow a well recognised clinical course. Lyme disease has been found in numerous conditions including many neurological syndromes. Whether there are causal links is not known but this can only be addressed by conducting further research. Aetiologies of conditions across the medical disciplines are frequently unknown and we should not be closed to the possibility that tick borne diseases could occupy a significant part of the "aetiology gap".

*Borrelia* bacteria, like ticks, are found throughout the UK. More detailed mapping is needed of *Borrelia* species and sub species. Also little is known of the ecology of other tick borne infections. All of this will require a great deal more research.

*Borrelia* modifies a host's physical environment and can corrupt host systems. It will be a great challenge to unravel the complexities of host-pathogen and pathogen-pathogen interactions in tick borne diseases. This is another area which can only be addressed with more research.

There are few topics more controversial in medicine today than the topic of Chronic Lyme Disease. The term itself has not been satisfactorily defined. That some patients develop chronic illness following a tick bite is beyond dispute but whether patients have chronic *Borrelia* infection, some other tick borne infection, non-

infective pathologies or a combination of all three is not known. Further research into tick borne illnesses is the only way to address the problem.

In some ways the medicine of tick borne diseases is more advanced than the science. Powerful anti-microbial therapies are providing health benefits for some Lyme disease patients without proof of the underlying infections. This is not unusual in medicine. I have witnessed conflicts between the puritanical microbiologist's approach and the clinician's pragmatic approach to therapies long before Lyme disease was described. More research is needed to improve testing for tick borne infections but this will not be a substitute for the clinician's skills.

How much money is currently being spent on Lyme disease research in the UK?

I am not aware that there are any public funds ring fenced for the purposes of tick borne disease research in the UK.

So what is the research money being spent on? One example is the human genome project. Knowing the DNA sequence for an entire human genome would certainly seem to be a worthwhile exercise but the potential benefits may have been overstated. It is the interactions between genes and the environment which are important in the context of human diseases and the only way to investigate this is to conduct detailed biological research at all levels not just the genomic.

Pharmaceutical companies have invested vast sums researching medications which modify our immune systems and they have had more than modest success in this respect. The area of antimicrobial therapy has been neglected and since there is every possibility that stealth infections such as Lyme disease can be the source of our overactive immune systems addressing the infective processes themselves would seem to a logical approach.

In conclusion I would state that there is certainly a good humanitarian case and possibly a good economic case for carrying out more research into tick borne diseases in the UK.

Let 2009 be seen as the year that this investment began.

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