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Editorial

Of ignorance and blindness: The Lyme disease paradigm

Maladie de Lyme : ignorance et aveuglement

1. Ignorance

Scientific knowledge is constantly evolving. Bertolt Brecht had Galileo say that “truth [was] the daughter of Time” [1]; he meant that scientific points of view or analyses evolve and more importantly that they must evolve. One must therefore reject any type of dogmatism and know that what we have learnt and what we teach is only representative of a specific interpretation of data at a given time. At best, one needs to know. Nietzsche said that “scientists must break their respectful heart from their masters” [2]. I have been teaching to students for the past 20 years and I always tell them that what I am teaching is not the truth, but merely a simplification of what we know so far, and that without this simplification my lecture would be beyond understanding. I also tell them that, as a scientist, I am a “renegade” – meaning that I would be ready to reject any scientific theory that would have become obsolete if new knowledge came to hand. This highlights our ignorance of unexplained diseases. As I have spent my whole life doing research, I find it quite easy to tell patients that I do not know the cause or the solution to their problems. When I am confronted with diseases of my field of specialty, I tell them that if I do not have this piece of information it is because no one knows. We stand in a grey area – that of ignorance – and this is precisely why I am doing research. This often helps in soothing patients who have been seeking diagnosis for so long and are afraid of being misdiagnosed.

One of the main factors motivating a dissenting patient advocacy group is our ignorance. Indeed, patients presenting with symptoms leading to disabilities do not accept our ignorance. This is why some of our colleagues – who reject this concept of ignorance – ascribe such symptoms to existing diseases even though diagnostic examinations validated by healthcare authorities and scientific societies provide negative results for those existing diseases. This hypothesis is possible. One must admit that in some diagnostic fields the sensitivity of our tools is not 100%. We have known for quite a while now that for leptospirosis for instance – just like for the HIV infection before that – the virus can remain undetected by laboratory techniques during the latent phase of the disease. This means that routine laboratory

techniques are firstly negative and that positive results are only obtained after this latent phase.

Many subjective syndromes, i.e. without any markers for organ lesions, are prone to diagnostic errors. In France, those syndromes – including the chronic fatigue syndrome – have long been considered to be due to psychiatric causes and have often been treated with psychotherapy and psychotropic drugs. Physicians in the United Kingdom and in the United States did not agree with this psychiatric origin and strove to find other explanations for those syndromes. Lyme disease, the Gulf War syndrome, and in France diseases suspected to be caused by depleted uranium ammunitions or Q fever were all suspected to cause psychiatric diseases [3]. When I grew up, Rickettsia was thought to cause psychiatric diseases and was even believed to cause multiple sclerosis [4].

Our ignorance has sometimes led us to believe that some diseases had a psychiatric cause while they were somatic and could be easily treated. This was true for urethritis with clear discharge. At the start of my medical training, urethritis with clear discharge in men was believed to be psychiatric diseases. Patients often tried to extract a drop from their penis and urologists used to call them – with contempt – “milky men”. I remember learning during my urology lectures that these patients were psychiatric patients who spent their time pulling on their penis. When Chlamydia trachomatis was isolated from patients presenting with urethritis with clear discharge, these patients – considered by all as mad men – were all successfully treated with 7 days of doxycycline [5]. Our denied ignorance led us to use psychiatry as the repository of our own ignorance.

2. Blindness

Our ignorance is often unbearable and may lead us to turn a blind eye on non-lesional diseases. But these diseases do exist. Patients consulting numerous physicians to obtain a therapeutic solution are truly sick. Some of them may obviously be phony patients, but they are usually rapidly identified. For the others, this disease and this succession of consultations and physicians with the sole objective of feeling better is extremely grueling,

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and our blindness should not lead us to deny the existence of the disease itself. This denial is at the core of the rage of some patient advocacy groups. However, the main problem here is to distinguish purely subjective data from brain metabolic disorders of organ origin. Modern imaging techniques are luckily of a great help here as we can now identify pathways caused by metabolic changes of psychogenic origin such as the “nocebo” effect [6], for which the neuroradiological marker can be identified. Several imaging techniques can now distinguish images associated with diseases of psychogenic origin from organic diseases. These imaging results lead us out of our own blindness and are essential for the future. Being able to show such images to patients contributes to allaying the fear of not being understood.

Besides, physicians and patients highly underestimate the practical role of the placebo effect in terms of therapeutics. As the placebo effect improves symptoms while the molecules used do not have any direct impact on these symptoms, it prevents physicians from fully understanding patient care management. We know for a fact that our ignorance allows active substances used for the wrong reasons to give positive results. It is therefore not unlikely that the excessive prescription of antibiotics to patients presenting with a suspicion of Lyme disease is effective in treating unknown bacteria. *Bartonella* [7] strains have thus been isolated from the blood of patients presenting with chronic fatigue syndrome following a tick bite. However, we are not aware of the role of these bacteria in the onset neither of chronic fatigue syndrome nor of the role of antibiotics in helping resolve this effect. This is a matter of discovery and not therapeutic solution. Besides, placebo-controlled studies indicating that the benefit of placebo is as important as that of antibiotics are interesting but may be associated with a loss of therapeutic opportunity for patients [8]. When we observe that the placebo induces the same effect as the drug, physicians might tend not to prescribe the drug. The benefit of the placebo thus disappears and so does the therapeutic intervention. Patients must use alternative treatment or consult alternative physicians. This problem is inherent to our civilization: not being able to lie to patients partly prevents the efficacy of the placebo. The empathy of the prescriber also plays a part in the intensity of the placebo effect, which may sometimes be similar to a miraculous effect.

The prescriber can also be the one to trigger a “nocebo” effect if he warns patients that treatment efficacy is so high that it may trigger negative effects. This phenomenon may regularly be observed with hypothetical Lyme disease patients treated with antibiotics, which is supposed to confirm the cause.

Scientists are and must remain sceptical, modest, and ready to change their mind in light of new data. They must, however, be aware that they will never know everything. This should, however, not prevent physicians from being therapists. Let us not forget that until the 19th century the efficacy of most

treatments prescribed to patients had never been proven, which did not prevent the distinction between a good and a bad physician. Sciences cannot explain the whole therapeutic management as it mainly relies on a human approach. Such approach may, however, be more difficult nowadays as transparency and social networks may reinforce our blindness rather than contribute to the medical management of complex problems [9].

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D. Raoult

Aix-Marseille université, MEPHI, IRD, IHU méditerranée
infection, 19-21, boulevard Jean-Moulin, 13385 Marseille
cedex 05, France

E-mail address: didier.raoult@gmail.com

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