



Editor's Viewpoint

Confluence Between Veterinary and Human Neuropathology

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In 1906 a great man and scientist, Santiago Ramón y Cajal- together with Camilo Golgi- were awarded the Nobel Prize in Medicine for their extraordinary contribution to the understanding of the nervous system. Most of the subjects today recorded and discussed in the field of neurology/neuropathology were either discovered or suggested by Dr Ramón y Cajal who had a symbiotic relationship with the microscope and a refined attitude for drawing. His history is fascinating and his mind as privileged as to announce matters as “new synapses form throughout life to serve as physical basis of learning and memory”, a fact only recently proven involving the glial cell named astrocyte by this magnificent researcher.

Along so many years of science, the development of the nervous system has been thoroughly scrutinized in many species, and some knowledge on its regeneration and repair has been added. What do we need yet to be satisfied about this system? It is simple: to accept that it overwhelms us when illnesses develop within it. We feel helpless. If we consider the emotional and financial burden implied in nervous disturbances of man and animals, science must prevail.

To overcome our difficulties many animal models that mimic spontaneous diseases have been created. Each one has improved even if in a minute slice what was already accepted as our scientific heritage on nervous sciences. These models developed in various domestic and laboratory species have helped for decades in fields as diagnosis and therapy, and have escorted all steps of emerging knowledge. We are certainly satisfied but we seek for more. Animal models are good but are not the end of it. The reason for this is that in repeating opportunities nervous diseases proper of man have been diagnosed in animals and vice versa. Probably the outstanding disease that comes to our mind is BSE (bovine spongiform encephalopathy): development, lesions, lack of treatment, outcome, all the same in bovines and men. What is the meaning of this confluence? We had been in touch with

scrapie for centuries but it did not affect us. This shows us that changes happen and we must be ready for them.

In recent years genetically modified animals (i.e. knock out mice) as well as cell therapy have occupied minds and efforts in the field of medicine. Both high technology biological possibilities represent a step forward to unraveling the hidden facts that characterize nervous degenerative diseases. Most body tissues repair satisfactory, the peripheral nervous tissue may do it but the central nervous tissue does not. Why is this? Because it is a unique network of cells and fibers that mix and connect through gap junctions and connexins in an exquisite manner to provide the cognitive and emotional basis of our existence. As the intermingling of structures is so intricate, repair becomes almost impossible. Add to that that some molecules (nogo) of the central nervous system have the specific duty of preventing any attempts to reconstruct the tissue: wrong connections must be avoided!

Thus our knowledge relies on studies in animals either with spontaneous or experimentally inflicted ailments. Diseases that similarly affect humans and animals sum up a large cluster concerning neuronal, axonal and myelinic disturbances. Those similarities are very well described by groups of investigators. The points of confluence show us some of the paths worth following. Let's get in the track.

Suggested Reading:

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