Manitoba Neuroscience Network Seminar Series

Friday, May 31, 2013 | 9:00 am

Dr. Gordon Glazner

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Topic: Investigating the role of NF-κB in diabetic neuropathy.

Location: PX236/238, Psychiatry Bldg. Bannatyne Campus

In people with diabetes, a major complication is neuropathy, in which sensory nerve endings die back from the limbs. This leads to severe pain, numbness, skin ulcerations and poor would healing, and often ends in amputation of the limb. We and others have found that NF-kB, a protein that regulates the production of other proteins, is decreased in the sensory nerves of diabetic animals. We've also found that both the hormones that stimulate NF-kB and a key antioxidant protein produced by NF-kB action are decreased in sensory neurons. We propose now to use our new knowledge to find if activation of this pathway can inhibit diabetic neuropathy, and to find out if loss of this pathway in diabetes is the root cause of neuropathy. This project is separated into five separate aims. In Aim 1 we will deliver a NF-kB stimulating hormone, called CNTF, to diabetic animals, and we will determine if this can reduce or reverse formation of diabetic neuropathy. In Aim 2, we will see if inhibition of this pathway, either by specific drugs or by genetic deficiency, can increase the severity and risk for development of diabetic neuropathy in rodents. In Aim 3, we will investigate whether diabetes inhibits more members of the newly discovered pathway, and if we can rescue neurons by reversing this loss. In Aim 4 we will discover whether increasing anti-oxidant action can prevent formation of diabetic neuropathy. In aim 5, we will examine what it is about diabetes that causes inhibition of this pathway. Our group has recently discovered a pathway that normally keeps sensory nerves healthy is disrupted in diabetes. We believe that this disruption is the underlying cause of neuropathy. The proposed work will take these findings into whole animal "proof of concept" studies to determine if manipulation of this pathway can be used therapeutically, and will help to discover the underlying cause of diabetic neuropathy.

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