Glaucoma can actually be the diabetes of the brain, say researchers

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Acute angle closure glaucoma of the right eye (intraocular pressure was 42 in the right eye). Credit: James Heilman, MD/Wikipedia

Researchers at All India Institute of Medical Sciences, New Delhi, India and Dr. B. R. Ambedkar Centre for Biomedical Research, Delhi, India have proposed a new mechanism of glaucoma suggesting that diabetes can occur in the brain and may be the cause of many neurodegenerative disorders including glaucoma. Muneeb Faiq and his co-investigators at All India Institute of Medical Sciences and Dr. B. R. Ambedkar Centre for Biomedical Research have attempted to explain the secrets of this disorder through their new theory which may open door for a new era of research on this disease and other related disease of the eyes and brain. Glaucoma is the leading cause of irreversibly blinding disorders and affects millions worldwide. There is no known cure for glaucoma. The

disease is considered as one of the most complex human diseases.

Glaucoma is the leading irreversibly blinding disorder with almost 65 million sufferers worldwide. There is no cure for glaucoma and the best that can be done is lowering of the intraocular pressure pharmacologically and/or surgically. Many patients continue to progress to blindness despite an apparently controlled or low intraocular pressure. Proper understanding about the underlying mechanism of glaucoma is necessary to develop therapeutic regimens and management strategies. The recent paper by Faiq et al., published in *Medical Hypotheses* titled "Glaucoma: Diabetes of the brain - a radical hypothesis about its nature and pathogenesis", is a thorough scientific and philosophical insight into what might be the actual facets and underlying molecular secrets of this disease.

The investigators explore glaucoma and related neurodegenerative diseases from many perspectives and come up with a multidimensional and internally coherent concept of glaucoma being "the diabetes of the brain". On the basis of the striking similarities in genetic, biochemical and molecular aspects, they have come to recognize that glaucoma is, in fact, a form of brain specific diabetes. The authors working at Dr. Rajendra Prasad Centre for Ophthalmic Sciences, All India Institute of Medical Sciences, Laboratory for Molecular Reproduction and Genetics, All India Institute of medical Sciences and Medical Biotechnology Laboratory, Dr. B. R. Ambedkar Centre for Biomedical Research, India explain it in terms of many arguments including but not limited to brain signal transduction, streptozotocin effects on brain, eye pressure lowering by antidiabetics etc. Their study is likely to make a radical shift in the existing paradigm in the understanding of glaucoma (and other neurodegenerative disorders like Alzheimer's disease). This finding might establish glaucoma as one more diabetes type (as the authors suggest "Diabetes Type-4") and may possibly give birth to new concepts in glaucoma therapy and management. New treatment and therapeutic

modalities are likely to see the light of the day as a natural consequence of their theory.

Faiq and his group had previously proposed that Diabetes is a peculiar and uniquely human disease with an evolutionary handcuff to brain. They had proposed that due to certain unique aspects of human evolution, physiology and anatomy, humans have a special predisposition for diabetes.

More information: Glaucoma - Diabetes of the brain: A radical hypothesis about its nature and pathogenesis, *Med Hypotheses*. 2014 May;82(5):535-46. DOI: 10.1016/j.mehy.2014.02.005 Epub 2014 Feb 13.

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