

Sunlight exposure and latitude linked to development of dystonia symptoms

June 5 2015, by Thomas Deane



Cloud in Nepali sky. Credit: Wikipedia

People with a genetic predisposition to dystonia living closer to the equator (and who are thus exposed to more sunlight) are more likely to develop involuntary contraction of their eye muscles (blepharospasm) than those in their necks.

Dystonia is one of many neurological disorders that manifests itself in a variety of ways, but now a collaborative research team has shown that sun exposure drives one of the different manifestations of the condition that often leaves those affected feeling socially isolated and marginalised.

Dystonia is the third-most common movement disorder, affecting up to

3,000 people in Ireland. The disorder may present in different ways, ranging from writer's cramp to involuntary head rotations and to the involuntary eyelid closure known as blepharospasm. Scientists believe that abnormal signalling from areas deep in the brain results in abnormal, overactivity of muscles.

Botulinum toxin (Botox) injections are typically given to treat the [physical symptoms](#) of the disorder and while this can be somewhat effective, the injections need to be repeated once every three to four months. Further to the physical symptoms, people with Dystonia feel socially isolated, so there is thus a great need to better understand the different types of [dystonia](#).

In a recent research study entitled 'Sun exposure is an environmental factor for the development of blepharospasm', published in the international peer-reviewed *Journal of Neurology, Neurosurgery & Psychiatry*, a collaborative research team from Trinity College Dublin, UCD and St Vincent's Hospital has found that sunlight exposure for people genetically predisposed to dystonia, and living closer to the equator, is a key driver in the development of involuntary eye closure (blepharospasm).

Speaking about the study, first author Dr Anna Molloy, Neurology Registrar at St. Vincent's University Hospital, said: "We looked at 15 different studies that reported the relative prevalence of involuntary eyelid closure (blepharospasm) and a type of involuntary neck movement (called [cervical dystonia](#)) in people living at various latitudes from Reykjavik in Iceland to Kolkata in India. For each of the locations we took solar insolation information from the US national Aeronautics and Space Administration (NASA) Surface and Meteorology and Solar Energy (SSE) database. What we see is a significant pattern, whereby the people living closer to the equator, and exposed to more sunlight, are much more likely to develop blepharospasm than cervical dystonia."

Co-author, Research Professor of Neural Engineering at Trinity, Richard Reilly, added: "This finding further supports our previously published work investigating the role of environmental factors in the manifestation of adult-onset dystonia."

Senior author, Professor Michael Hutchinson, St. Vincent's University Hospital and University College Dublin, concluded: "This further supports evidence for the interaction between genetics and environmental factors in the development of the adult onset focal dystonia."

More information: "Sun exposure is an environmental factor for the development of blepharospasm." *J Neurol Neurosurg Psychiatry* jnnp-2014-310266 Published Online First: 22 April 2015 [DOI: 10.1136/jnnp-2014-310266](https://doi.org/10.1136/jnnp-2014-310266)

Provided by Trinity College Dublin

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