New research finds high tungsten levels could double stroke risk

Press Release

Under embargo until 22:00 GMT on Monday 11th November (17:00 EST)

High levels of tungsten in the body could double the risk of suffering a stroke, a new study published in the open access journal PLOS ONE has found.

Using data from a large US health survey, the study has shown that high concentrations of tungsten – as measured in urine samples – is strongly linked with an increase in the occurrence of stroke, roughly equal to a doubling of the odds of experiencing the condition.

Conducted by a team from the University of Exeter, the study represents the most comprehensive analysis to date of the potential health effects of the metal.

According to figures from the World Health Organisation, stroke is currently the second leading cause of death in the Western world, ranking only second to heart disease. It is also the leading cause of disability in adults, often resulting in loss of motor control, urinary incontinence, depression and memory loss.

The research used data from the US based National Health and Nutrition Examination Survey (NHANES), analysing information for 8614 participants aged between 18 and 74 over a 12 year period.

Higher tungsten levels were found to be strongly associated with an increase in the prevalence of stroke, independent of typical risk factors. Importantly, the findings show that tungsten could be a significant risk factor for stroke in people under the age of 50.

Whilst our current exposure to tungsten is thought to be very low, recent years have seen a significant increase in the demand and supply of the material - which is commonly used in consumer products such as mobile phones and computers, as well as a number of industrial and military products.

During its production, small amounts of the metal can be deposited in the environment, eventually making their way into water systems and onto agricultural land. With largely unknown health consequences, tungsten has been identified as a toxicant of emerging concern.

Lead author of the research, Dr Jessica Tyrrell, of the University of Exeter Medical School's European Centre for Environment and Human Health, said "Whilst currently very low, human exposure to tungsten is set to increase. We're not yet sure why some members of the population have higher levels of the metal in their make-up, and an important step in understanding and preventing the risks it may pose to health will be to get to the bottom of how it's ending up in our bodies."

The tungsten-stroke relationship observed in this research highlights another example of the potentially negative impact new materials can have on health. Recent years have seen an exponential increase in the production of chemicals for commercial exploitation, including the introduction of nanotechnology. In many cases the health effects of these chemicals are largely unknown and there are few controls to prevent their discharge into the environment.

Another of the paper's authors, Dr Nicholas Osborne, added "The relationship we're seeing between tungsten and stroke may only be the tip of the iceberg. As numerous new substances make their way into the environment, we're accumulating a complex 'chemical cocktail' in our bodies. Currently we have incredibly limited information on the health effects of individual chemicals and no research has explored how these compounds might interact together to impact human health."

Notes to Editors

The study *High urinary tungsten concentration is associated with stroke in the National Health and Nutrition Examination Survey 1999-2010* is published in the journal PLOS One.

http://dx.plos.org/10.1371/journal.pone.0077546 (not available until embargo lifts)

A video is available to accompany this release; it can be embedded wherever appropriate:

https://vimeo.com/75778420

Unedited rushes of an interview with the study's lead author are available for download here http://bit.ly/19DABk7.

This footage is intended for use in online and network news broadcasts covering this press release only, and should not be used for other purposes. Please notify a.j.smalley@exeter.ac.uk if you intend to use this material. AV is 2'00 long and filmed at 1080p and 25fps, encoded with h.264, file size ~500mb.

Further details can be found here:

www.ecehh.org/research-projects/tungsten-stroke/ (not available until embargo lifts)

For further information please contact Alex Smalley on a.j.smalley@exeter.ac.uk or 01872 258131.

About the European Centre

The University of Exeter Medical School's European Centre for Environment and Human Health is part financed by the European Regional Development Fund Programme 2007 to 2013 and European Social Fund Convergence Programme for Cornwall and the Isles of Scilly.

The Department for Communities and Local Government is the managing authority for the European Regional Development Fund Programme, which is one of the funds established by the European Commission to help local areas stimulate their economic development by investing in projects which will support local businesses and create jobs. For more information visit www.communities.gov.uk/erdf

European Social Fund Division, part of the Department of Work and Pensions, is the managing authority for the European Social Fund (ESF) Convergence, which is one of the funds established by the European Commission to help local areas stimulate their economic development. ESF Convergence invests in the economic regeneration of Cornwall & Isles of Scilly, investing in people, their jobs and skills. For more information visit http://www.dwp.gov.uk/esf/ and http://www.cornwallworks.org.uk/

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