Medical Xpress

Serum iron levels may be causally associated with Parkinson's disease risk

June 4 2013

Increased iron levels may be causally associated with a decreased risk of developing Parkinson's disease, says a new paper published this week in *PLOS Medicine*. Irene Pichler from EURAC in Italy and a group of international colleagues investigated whether there was any evidence of an association between serum iron levels and the risk of Parkinson's disease. While the causes of Parkinson's disease are currently unknown, a combination of genetic and environmental factors are said to be attributed to the disease.

Because previous studies have shown a possible association between lower blood levels of iron in people with Parkinson's disease compared with controls, the researchers used a Mendelian randomization approach to investigate this link. The researchers estimated the effect of blood iron levels on the risk of Parkinson´s disease using three polymorphisms in two genes, HFE and TMPRSS6. For each polymorphism, they performed a meta-analysis combining the results of studies investigating the genetic effect on iron levels, which included almost 22,000 people from Europe and Australia, and a meta-analysis of studies investigating the genetic effect on the risk of Parkinson´s disease, which included a total of 20,809 people with Parkinson's disease and 88,892 controls from Europe and North America. They then performed three separate Mendelian randomization analyses to estimate the effect of iron on Parkinson disease for the three polymorphisms. By combining the three estimates, they obtained a statistically significant odds ratio of 0.97 for Parkinson´s disease per 10 μg/dl increase in iron, corresponding to a 3% reduction in the risk of Parkinson´s disease for every 10 μg/dl increase in

blood iron. Since genotype influences on blood iron levels represent differences that generally persist throughout adult life, the combined Mendelian randomization estimate reflects an effect of iron over the course of a lifetime.

These findings suggest that increased iron levels in the blood are associated with a 3% relative reduction in the risk of Parkinson's disease for every 10 μg/dL increase in iron. This finding is important as it suggests that increased blood iron levels may have a protective effect against Parkinson's disease, say the authors, although the underlying mechanism remains unclear. Another limitation to this study is that there may be remaining sources of bias associated with the Mendelian randomization approach, which may influence the interpretation of this study. Further studies on the underlying mechanisms are needed before any specific treatment recommendations can be proposed, say the authors.

More information: Pichler I, Del Greco M. F, Go¨ gele M, Lill CM, Bertram L, et al. (2013) Serum Iron Levels and the Risk of Parkinson Disease: A Mendelian Randomization Study. PLoS Med 10(6): e1001462. doi:10.1371/journal.pmed.1001462

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https://medicalxpress.com/news/2013-06-serum-iron-causally-parkinson-disease.html

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