Author/s:
Guerin, A;Bonomo, Y;Bozaoglu, K;Dean, B;Lawrence, A;Berk, M;Rossell, S;Kim, JH

Title:
Genes and Cognitive Deficits in Adolescent-Onset Methamphetamine Use Disorder: Preliminary Evidence From a Cross-Sectional Study

Date:
2021-05-01

Citation:
Guerin, A., Bonomo, Y., Bozaoglu, K., Dean, B., Lawrence, A., Berk, M., Rossell, S. & Kim, J. H. (2021). Genes and Cognitive Deficits in Adolescent-Onset Methamphetamine Use Disorder: Preliminary Evidence From a Cross-Sectional Study. [Abstract]. BIOLOGICAL PSYCHIATRY, 89 (9), pp.S148-S149. https://doi.org/10.1016/j.biopsych.2021.02.382.

Guidelines for Submission and Presentation

• All non-members who wish to submit an abstract must indicate the name of the Society member who is sponsoring the author's abstract. The sponsor does not need to be involved in your research or a co-author on your abstract. Email sobp@sobp.org if you need assistance locating a member.

• Abstracts must be 250 words or less and use a structured format which includes sections for Background, Methods, Results, Conclusions.

• Abstracts should include relevant background, well-described methods, study results including number of subjects and relevant statistics, and a clear statement about the novel, unpublished findings that will be presented.

• You must enter complete disclosure information with your submission.

Genes and cognitive deficits in adolescent-onset methamphetamine use disorder: Preliminary evidence from a cross-sectional study

Alexandre A. Guerin 1,2; Yvonne Bonomo 2,3; Kiymet Bozaoglu 4; Brian Dean 1,2; Andrew J. Lawrence 1,2; Michael Berk 5; Susan L. Rossell 3,6; Jee Hyun Kim 1,2,5

1 Florey Institute of Neuroscience and Mental Health
2 University of Melbourne
3 St Vincent's Hospital Melbourne
4 Murdoch Children's Research Institute
5 Deakin University
6 Swinburne University of Technology

248/250 words

Background:

Methamphetamine is the second most used illicit substance globally. More alarming, methamphetamine use typically begins early. This is a major concern as adolescence is a period of heightened vulnerability to substance use disorders. Evidence suggests that the interplay between gene polymorphisms, expression, and cognitive deficits may be contributing factors.

Methods:

People with a current DSM-5 diagnosis of methamphetamine use disorder (last use within 7 days) and matched-controls were recruited (N=92). Participants completed a cognitive task battery assessing speed of processing, cognitive flexibility, working memory, and inhibitory control. Whole blood was collected to assess polymorphisms and mRNA expression of genes of interest.

Results:

People with methamphetamine use disorders displayed deficits in all cognitive domains (ps<0.05). Inhibitory control performance correlated with age of onset of methamphetamine use (r= 0.458, p<0.05). Preliminary chi-square analyses revealed that distribution of the Pro4Thr polymorphism of the vesicular monoamine transporter 1 gene SLC18A1 was significantly different between controls and people who use methamphetamine ($\chi 2=8.21;p=0.017$), with the minor allele conferring a risk for

Commented [JK1]: Revised because 15 years don't sound too young, and I've seen reports as young as 10 in Australia: https://www.thecourier.com.au/story/2380969/children-as-young-as-10-using-ice-in-ballarat/

Commented [JK2]: VMAT1 right not 2?

methamphetamine use disorder (OR= 2.82). Pro4Thr was also associated with an earlier age of onset of methamphetamine use (p=0.41).

Commented [JK3]: shouldn't this be less than 0.05?

Conclusions:

Our preliminary results suggest that polymorphisms and change in expression of the versicular monoamine transporter 1, a key regulator of cytosolic and synaptic dopamine levels, may be a risk factor for developing methamphetamine use disorder when meth use occurs early in life. Future steps include replication in a larger cohort, and investigation of gene-cognition interactions to better understand adolescent susceptibility for methamphetamine use disorder.

Funding:

Florey Foundation Support

NHMRC Career Development Fellowship (JHK)