



RESEARCH

INFORMATION

TriMethS – A novel urine test for small strokes and mini-strokes?



AIMS

We aimed to establish whether levels of a small molecule in the urine (which we call TriMethS) could be used to identify people with a small stroke or mini stroke caused by a blockage in an artery. We first wanted to assess whether the levels differed in people who had a confirmed small stroke or mini-stroke (also called a TIA) compared to people who turned out to have another diagnosis (such as a migraine or seizure). We then wanted to see whether the levels of TriMethS could improve the ability of doctors to make the right diagnosis.



KEY FINDINGS

- The study enrolled 321 people with suspected small stroke or mini stroke but analysis of samples was delayed due the COVID-19 pandemic.
- We found TriMethS in the urine in fewer people than we saw in previous studies (23% of people had detectable levels of TriMethS).
- There was no difference in the levels of TriMethS between people with a confirmed small stroke or mini stroke compared to people with no stroke.
- TriMethS levels will not help with diagnosis or prediction of outcome in people with suspected mini stroke or small stroke.
- We have created a dataset of demographic, clinical and imaging data in people with a small stroke or mini-stroke, which will be useful for future study.
- We have already used this dataset to test different scoring systems and diagnostic instruments for diagnosis of mini stroke.





WHAT DID THE STUDY INVOLVE?

We previously did two small studies that demonstrated that levels of TriMethS in the urine were greater in people with a stroke or mini stroke compared to people without. In this study we included 321 people with a suspected small stroke or mini stroke from eight stroke services in Scotland and England. A urine sample was obtained as soon as possible after admission and participants were followed up to establish whether they had a stroke or not. The urine samples were then analysed using a metabolomics approach. This uses a technique called mass spectrometry and allows us to analyse all the small molecules that are present in the urine. We then specifically identified the levels of TriMethS and compared the levels in people with a small stroke or mini stroke with the levels in people who did not.



WHAT WERE THE RESULTS AND WHAT DO THEY MEAN?

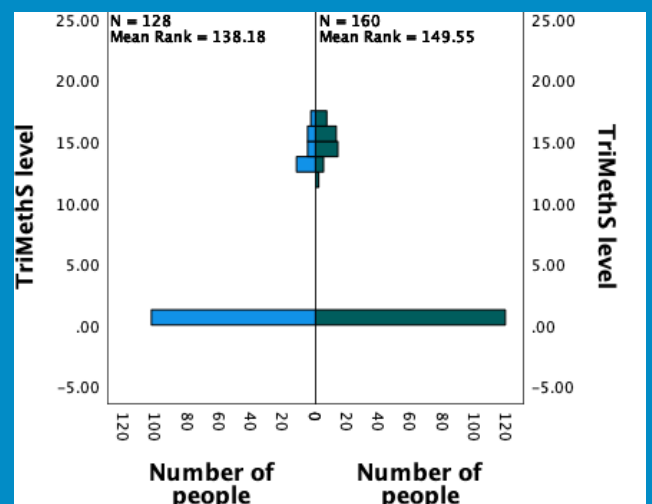
The mean age of participants was 60 years and 45% were of female gender. 55% had a confirmed small stroke or mini stroke and 45% were confirmed to have not had a stroke. Of the 321 included, 288 had a complete set of diagnostic data and a suitable urine sample for analysis.

TrimethS levels were detected in 23% of people. TriMethS was found in 26% of people with confirmed small stroke or mini stroke and in 20% of people without. This difference was not significant on statistical testing. Further, the absolute level of TriMethS did not differ between people with small stroke or mini stroke and people without.

We found that TriMethS levels were not able to help accurately diagnose people with suspected small stroke or mini stroke.

Unfortunately, we do not think TriMethS levels are worthy of further study. Because of this we did not proceed with our planned work to explore use and interpretation of the test with our stroke survivor group.

The graph shows the TriMethS levels in people with small stroke or mini stroke (on the right in green) and non stroke (on the left in blue). The number of people with a given level is shown at the bottom. You can see that most people in both groups had a level of zero and even where TriMethS was detected, the level was similar in people with and without small stroke or mini stroke.





WHAT IMPACT COULD THE FINDINGS HAVE?

- Sadly our findings make clear that urinary TriMethS levels will not be useful in helping doctors diagnose people with suspected stroke or mini stroke.
- We have created a detailed dataset which is available to others to use.
- In particular, we have data on all the metabolites and small molecules present in the urine and imaging findings which make this a valuable resource.



HOW WILL THE OUTCOMES BE DISSEMINATED?

We will make our findings available to researchers via publication in an open access setting and we will inform the study participants of the results.

Importantly, we will share our data with the Virtual Stroke Trials Archive which gives access to the data for academic collaborators (<https://www.virtualtrialsarchives.org/vista/>).

We will also share the metabolite data via a specialised data sharing platform for these types of data.



CONCLUSION

TriMethS levels are not helpful for doctors who are looking after people with suspected stroke.

We hope that this unique dataset of imaging, clinical findings, follow-up and metabolite levels will be useful to other researchers as we try to improve care for people with stroke.



RESEARCH TEAM & CONTACT

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The project enrolled people in 2018 and 19. Samples were ready for analysis in March 2020 but this was delayed due to the COVID-19 pandemic. We received £279,195 funding from the Chief Scientist Office and support from the Scottish Stroke Research Network and the Manchester Clinical Research Network.

