

Stroke blood test that could increase use of most effective treatment five-fold

September 20 2012

Researchers at the University of Geneva (UNIGE), in collaboration with UK company Proteome Sciences plc (PS) describe a simple blood test that could substantially increase the number of patients eligible for highly effective ischaemic stroke therapy in a paper "Blood Glutathione S-Transferase-pi (GSTP) as a Time Indicator of Stroke Onset", published last week in the journal *PLoS ONE*.

Ischaemic [stroke](#) (which accounts for around 85% of strokes) can only be treated effectively with the 'clot busting' drug, rt-PA, if administered within a [time window](#) of up to 4.5 hours after symptoms start in the UK (up to 3 hours in the US). Approximately 35% of stroke victims are currently ineligible for treatment with rt-PA as they do not know the time of onset because the stroke occurs during sleep or the onset symptoms may not have been obvious. This blood test enables doctors to determine the time window in which a stroke has occurred and could give many of these individuals access to this crucial treatment.

The University of Geneva study reports the outcome of a long-running trial of 29 [blood proteins](#) that Proteome Sciences and its partners have previously identified as early markers of [brain damage](#) associated with stroke. In particular, the authors sought to identify readily available [protein markers](#) that help establish the time of onset of the stroke as an aid to select appropriate thrombolytic treatment. This will be particularly useful in cases where patients do not know when the stroke occurred. One protein, GSTP, showed an almost instantaneous increase in the blood of [stroke patients](#), peaking at 3 hours after onset and returning to

normal levels within approximately 6 hours.

Extrapolating the results of this study retrospectively across 555 patients who were admitted to the Geneva Hospital in 2006/7 with suspected stroke, but who did not know when their [stroke symptoms](#) started, indicates that testing for GSTP on all suspected stroke victims at admission, or preferably during initial assessment during transport to the hospital, could result in as many as five times more people being eligible for the highly effective rt-PA treatment for ischaemic stroke.

Leader of the study, Prof. Jean-Charles Sanchez, said: "This is a major step towards improving the management of ischaemic stroke patients using the drugs that we already have available. A simple blood test that matches the therapeutic window of rt-PA is a major advance that we encourage clinicians, pharmaceutical and diagnostics companies to unite to rapidly bring this into routine practice to improve patient outcomes."

Dr Peter Coleman, Deputy Director of Research at The Stroke Association said: "When a stroke strikes time lost is brain lost, meaning that getting to hospital and receiving treatment quickly is absolutely essential. At the moment, suspected stroke patients should receive a brain scan as soon as possible to confirm which type of stroke they have had and determine the best treatment for them.

"A test such as this which could be used to quickly diagnose a stroke, possibly before a patient arrives at hospital, could speed up the treatment process and potentially improve outcomes. Stroke Association welcomes new technologies that can speed up diagnosis or improve diagnostic accuracy for people with a suspected stroke."

Dr. Ian Pike, Chief Operating Officer of Proteome Sciences, noted: "With a potential five-fold increase in the number of patients having access to the most effective form of ischaemic stroke treatment, this

simple [blood test](#) will most importantly make the recovery time shorter and reduce the level of resulting disability for substantial numbers of [stroke victims](#) previously ineligible for drug therapy, whilst significantly reducing the cost of long term treatment and care.

"Following our license with Randox to develop a stroke test earlier this year, we expect to complete additional licenses with both diagnostic and pharmaceutical companies to ensure the technology is developed as quickly as possible to be used as a diagnostic tool for the use of rt-PA as a treatment."

More information: [dx.plos.org/10.1371/journal.pone.0043830](https://doi.org/10.1371/journal.pone.0043830)

Provided by University of Geneva

Citation: Stroke blood test that could increase use of most effective treatment five-fold (2012, September 20) retrieved 2 May 2024 from <https://medicalxpress.com/news/2012-09-blood-effective-treatment-five-fold.html>

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