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Press release
For immediate publication

An important glimpse into the brain: MRI scans can indicate the risk of cerebral hemorrhage

Graz, 28 June 2023: When the word stroke is used, it mainly refers to an ischemic stroke, where an artery in the brain is blocked so that affected areas of the brain are no longer supplied with nutrients and oxygen. Cerebral hemorrhage is another form of this medical emergency in which a blood vessel bursts. As a result, not only is the blood supply to parts of the organ disrupted but pressure from the escaping blood can result in further damage to the brain. A study at Med Uni Graz conducted by Simon Fandler-Höfler of the Department of Neurology examined the risk of cerebral hemorrhage and how magnetic resonance imaging (MRI) can help assess patient risk.

A question of timing

One common and particularly dangerous type of stroke is intracerebral hemorrhage. This occurs around 3,000 times a year in Austria and along with other types of stroke is the third most common cause of death. People who have survived such a hemorrhage generally have a higher risk of suffering another one. Often blood thinners (antiplatelet or anticoagulant drugs) must be taken for other conditions, which can make risk assessment difficult since they can exacerbate a cerebral hemorrhage. That is why it is extremely important to assess the individual risk of a recurrence of bleeding. The paper recently published in the renowned journal Neurology by Simon Fandler-Höfler of Med Uni Graz is concerned with how to predict the recurrence of cerebral hemorrhage using MRI.

Cause of cerebral hemorrhage

The study analyzed data from 443 patients who had suffered a cerebral hemorrhage. Based on the patients' MRI scans, the causes of hemorrhage were investigated as well as which of these causes were associated with the highest risk of recurrence of cerebral hemorrhage. Most of these emergencies are caused by cerebral microangiopathies, a group of diseases that damage the small blood vessels in the brain. On that point, Simon Fandler-Höfler explains: "Cerebral hemorrhage is often just accepted and its causes are not further investigated. Yet the determination of the underlying disease can provide a lot of information on the prognosis and risk of recurrent cerebral hemorrhage." The danger of recurrence is particularly high with cerebral amyloid angiopathy, a chronic condition that damages the smallest blood vessels and causes bleeding. Thanks to modern imaging methods, an individual's risk of recurrent hemorrhage from other causes can also be assessed, for example from hypertensive cerebral microangiopathy. These diseases are normally diagnosed from an MRI of the brain. Another

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separate research paper indicates which diagnostic criteria for cerebral amyloid angiopathy are particularly associated with the risk of recurrent hemorrhage.

Risk assessment

The study indicated that MRI can provide a good assessment of the risk of recurrent stroke. Depending on the combination of cause and MRI changes, this risk may be between 61% and less than 1% over five years. Patients who suffered a cryptogenic stroke, where a detailed examination did not reveal a specific cause, had an extremely low risk of recurrence. These test findings are important not only for treatment but also for the prognosis for patients, their families and caregivers. "MRI can be used for individual risk assessment, and in addition to its immediate significance for the patients concerned, it often has direct implications for decisions regarding drug therapy," says Simon Fandler-Höfler.

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Profile: Simon Fandler-Höfler
Simon Fandler-Höfler is a neurologist whose clinical focus is on neurological emergency and critical care medicine. He mainly deals with strokes, especially those caused by intracerebral hemorrhage.

To the publication:
Association of Presence and Pattern of MRI Markers of Cerebral Small Vessel Disease With Recurrent Intracerebral Hemorrhage
https://n.neurology.org/content/early/2023/06/22/WNL.0000000000207510

Comparison of Boston Criteria v2.0/v1.5 for Cerebral Amyloid Angiopathy to Predict Recurrent Intracerebral Hemorrhage
https://www.ahajournals.org/doi/10.1161/STROKEAHA.122.042407

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