

Is there a difference in clinical measures and structural magnetic resonance imaging metrics between minor stroke and migraine patients?

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Background
 Patients presenting with minor acute focal neurological symptoms are often diagnosed with minor stroke, transient ischaemic attack, or migraine. Early diagnosis and treatment, in the case of the first two, is important to reduce risk of major strokes. The aim of this study was to assess whether there was a difference in clinical measures and structural magnetic resonance imaging (MRI) metrics between minor stroke and migraine patients.

Methods
 Clinical measures and structural MRI metrics, the latter extracted with FreeSurfer, were analysed using t test, Pearson correlation coefficient and ordinal regression in SPSS, version 26. The Benjamini-Hochberg post-hoc analysis, with FDR of 0.05, was applied for the t tests and correlations.

	Minor Stroke	Migraine
n	22	24
Female	10 (45.5%)	12 (50%)
Age	54.2 (±13.8 SD)	44.2 (±13.0 SD)
Cortical lesion	9 (40.9%)	1 (4.2%)
Subcortical lesion	8 (36.4%)	1 (4.2%)

Results

- Systolic ($p=0.001$, $t=3.774$), mean arterial ($p=0.002$, $t=3.348$), diastolic blood pressure ($p=0.009$, $t=2.721$) and pulse pressure ($p=0.003$, $t=3.207$) were higher in minor stroke compared to migraine.
- Grey matter hyperintensities ($p=0.002$, $t=3.350$), white matter hyperintensities ($p=0.018$, $t=2.462$) and total Scheltens Score ($p=0.013$, $t=2.580$) were higher in minor stroke compared to migraine.
- Left ($p=0.007$, $t=-2.389$), right ($p=0.009$, $t=-2.722$) and total ($p=0.007$, $t=-2.815$) cortical thickness were higher in migraine compared to minor stroke.
- A significant correlation was observed between pulse pressure and total Scheltens score ($r=0.653$, $p=0.001$) in migraine patients.
- Ordinal regression showed an association between increased age and minor stroke with an odds ratio of 0.948 (95% CI, 0.902-0.996), Wald $\chi^2(1) = 4.449$ $p=0.034$.

Conclusion

- The minor stroke results are consistent with current literature.
- The increased cortical thickness in migraine, could possibly be linked to the cortical spreading depression theory.
- This finding and the significant positive correlation between pulse pressure and Scheltens score in migraine warrant further investigation.

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