

ASSOCIATION OF MITOCHONDRIAL F HAPLOGROUP WITH DIFFERENT SUBTYPES OF ISCHEMIC STROKE IN THE TAIWANESE POPULATION

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Objective:

To investigate the relationship between mitochondrial haplogroup and cerebral vascular disease in Taiwanese population. Moreover, we plan to assess and compare the markers of oxidative TBARS, anti-oxidative thiols and mitochondrial copy number in a cohort of stroke patients as well as their matched controls for understanding the differences that mitochondrial biogenesis plays in these patients.

Methods:

We examined mtDNA from 643 subjects with past history of cerebral vascular disease and 633 non-stroke controls. Each participant's blood sample was also analyzed for their oxidative TBARS (thiobarbituric acid reactive substances), antioxidative thiols and mtDNA copy number. Haplogrouping of cases by determination of specific SNP (single nucleotide polymorphism) within the coding region of mtDNA and sequencing of the D-loop region of mtDNA were also done.

Results:

The results showed that stroke patients have a higher oxidative TBARS and a lower anti-oxidative thiols level in comparison with the normal controls. Moreover, stroke patients have a lower level of mitochondrial DNA copy number than controls. In further comparison of the presentation rate of mitochondrial haplogroup between these two groups, we found no mitochondrial haplogroup in stroke patients showing a significantly higher rate than controls. However, in the comparison between different subtypes of stroke, we found that mitochondrial haplogroup F1 have a significantly higher rate of presentation in patients with small-vessel disease (odds ratio 1.75, CI: 1.00-3.06, $p=0.031$), whereas F2-4 haplogroup have association with increased risk of large-vessel disease (odds ratio 0.46, CI: 0.220-0.974, $p=0.030$).

Conclusion:

These findings are interesting and it is worth looking for the underlying pathology in future studies.

Key words:

mtDNA haplogroup, mtDNA D-loop sequence, oxidative stress; cerebral infarction.