

**HUBUNGAN POLIMORFISME GEN METHYLENETETRAHYDROFOLATE REDUCTASE  
(MTHFR) VARIAN c.677C>T TERHADAP  
DERAJAT KEPARAHAN STROKE ISKEMIK AKUT (SIA)  
DI DAERAH ISTIMEWA YOGYAKARTA**

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**INTISARI**

**Latar Belakang:** Polimorfisme gen *Methylenetetrahydrofolate reductase* (MTHFR) c.677C>T diketahui berperan dalam peningkatan kadar homosistein yang berhubungan dengan risiko dan keparahan stroke iskemik akut (SIA). Namun, hubungan antara polimorfisme ini dan derajat keparahan stroke iskemik akut masih menunjukkan hasil yang inkonsisten dan belum pernah diteliti khususnya pada populasi Indonesia.

**Tujuan:** Menganalisis hubungan antara polimorfisme gen MTHFR c.677C>T dan derajat keparahan SIA

**Metode:** Penelitian ini merupakan studi analitik observasional dengan desain potong lintang pada pasien SIA. Derajat keparahan stroke dinilai menggunakan NIHSS saat masuk rumah sakit dan dikategorikan menjadi <16 dan  $\geq 16$ . Pemeriksaan polimorfisme dilakukan dengan analisis genetik berbasis PCR. Analisis bivariat digunakan untuk menilai hubungan antara genotipe dan derajat keparahan, dilanjutkan analisis multivariat untuk mengontrol faktor perancu.

**Hasil:** Analisis bivariat menunjukkan perbedaan proporsi yang bermakna secara statistik antara polimorfisme *MTHFR* c.677C>T dan derajat keparahan SIA. Pada analisis multivariat setelah dikontrol terhadap faktor risiko klinis lain, hubungan tersebut tidak menunjukkan besar efek yang kuat dan interval kepercayaan relatif lebar.

**Simpulan:** Polimorfisme gen *MTHFR* varian c.677C>T berpotensi memiliki kecenderungan meningkatkan risiko stroke iskemik akut dengan derajat keparahan yang lebih berat, meskipun belum mencapai signifikansi statistik.

**Kata Kunci:** Polimorfisme, MTHFR, stroke iskemik, NIHSS

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**THE RELATIONSHIP OF c.677C>T VARIANT OF METHYLENETETRAHYDROFOLATE REDUCTASE (MTHFR) GENE POLYMORPHISM WITH THE SEVERITY OF ACUTE ISCHEMIC STROKE (AIS) IN SPECIAL REGION OF Yogyakarta**

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**ABSTRACT**

**Background:** The c.677C>T variant of *methylenetetrahydrofolate reductase* (MTHFR) gene polymorphism is known to play role in increasing homocysteine levels, which are associated with the risk and severity of acute ischemic stroke (AIS). However, the relationship between this polymorphism and the severity of AIS remains inconsistent and has not been studied, particularly in the Indonesian population.

**Objective:** To analyze the relationship between the MTHFR c.677C>T gene polymorphism and the severity of AIS.

**Methods:** This is an observational, analytical, cross-sectional study in AIS patients. Stroke severity was assessed using the NIHSS at hospital admission and categorized as <16 and  $\geq$ 16. Polymorphism testing was performed using PCR-based genetic analysis. Bivariate analysis was used to assess the association between genotype and severity, followed by multivariate analysis to control for confounding factors.

**Results:** Bivariate analysis showed a statistically significant difference in proportion between the MTHFR c.677C>T polymorphism and AIS severity. Multivariate analysis, after controlling for other clinical risk factors, showed no significant effect size, and the confidence interval was relatively wide.

**Conclusion:** The MTHFR gene polymorphism c.677C>T variant has the potential to increase the risk of acute ischemic stroke with greater severity, although statistical significance has not yet been achieved.

**Keywords:** Polymorphism, MTHFR, ischemic stroke, NIHSS

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