ABSTRACT

Background: *Visceral obesity, characterized by increased visceral fat accumulation, is a risk factor for metabolic diseases. Its prevalence has been rising in recent years. One of the genetic factors involved is the Melanocortin 4 Receptor (MC4R) gene. The relationship between the MC4R gene and visceral fat is still under-researched. This study aims to analyze the association between the MC4R rs17782313 polymorphism and visceral fat levels in the adult population of Jambi.*

Methods: *This study used an unmatched case-control design involving 112 subjects. Genotyping was performed using the Tetra-ARMS-PCR method, while visceral fat levels were measured using Bioelectrical Impedance Analysis (BIA). Data analysis was conducted using chi-square tests to determine the association between the MC4R polymorphism and visceral fat levels.*

Results: *Subjects with high visceral fat had an older average age (38.35 ± 10.41 years), were predominantly male (66%), and had larger waist circumferences (98.36 ± 7.76 cm) compared to the normal group ($p<0.05$). Genetic analysis revealed that the majority of genotypes were TT (75.9%), followed by TC (20.5%) and CC (3.6%). No significant association was found between the MC4R rs17782313 polymorphism and visceral fat distribution ($p>0.05$). Data stratification based on gender also did not show a statistically significant association with visceral fat ($p > .05$).*

Conclusion: *There were significant differences in age, sex, and waist circumference between the high and normal visceral fat groups. However, the MC4R rs17782313 polymorphism did not significantly correlate with visceral fat levels. Data stratification based on gender also did not reveal a significant association.*

Keywords: *MC4R polymorphism, Tetra-ARMS-PCR, visceral fat.*

ABSTRAK

Latar Belakang: Obesitas viseral ditandai dengan akumulasi lemak viseral meningkat merupakan faktor risiko penyakit metabolik. Prevalensinya meningkat dalam beberapa tahun terakhir. Salah satu faktor genetik yang berperan adalah gen *Melanocortin 4 Receptor* (MC4R). Hubungan gen MC4R dengan lemak viseral masih terbatas diteliti. Penelitian ini bertujuan untuk menganalisis hubungan polimorfisme gen MC4R rs17782313 dengan kadar lemak viseral pada populasi dewasa di Jambi.

Metode: Penelitian ini menggunakan desain *unmatched case-control* dengan melibatkan 112 subjek. *Genotyping* dilakukan menggunakan metode Tetra-ARMS-PCR, sedangkan kadar lemak viseral diukur dengan *Bioelectrical Impedance Analysis* (BIA). Analisis data dilakukan menggunakan uji *chi-square* untuk mengetahui hubungan antara polimorfisme gen MC4R dengan kadar lemak viseral.

Hasil: Subjek dengan lemak viseral tinggi memiliki rata-rata usia lebih tua (38,35 ± 10,41 tahun), mayoritas laki-laki (66%) dan lingkar pinggang (98,36 ± 7,76 cm) lebih besar dibandingkan dengan subjek kelompok normal ($p<0,05$). Analisis genetik menunjukkan mayoritas genotipe adalah TT (75,9%), diikuti TC (20,5%) dan CC (3,6%). Tidak ditemukan hubungan yang signifikan antara polimorfisme MC4R rs17782313 dengan distribusi lemak viseral ($p>0,05$). Data dengan startifikasi berdasarkan jenis kelamin juga tidak menunjukkan hubungan yang bermakna secara statistik dengan lemak viseral (p>,05).

Kesimpulan: Terdapat perbedaan bermakna dalam karakteristik usia, jenis kelamin, dan lingkar pinggang antara kelompok lemak viseral tinggi dan normal. Namun, polimorfisme gen MC4R rs17782313 tidak menunjukkan hubungan signifikan dengan kadar lemak viseral. Stratifikasi data berdasarkan jenis kelamin juga tidak menunjukkan hubungan yang signifikan.

Kata Kunci: Lemak viseral, polimorfisme MC4R, Tetra ARMS-PCR