ABSTRACT

Objective: Several genes were suspected as a genetic marker of schizophrenia disease. This research was done to investigate the influence of Cathecol O-methyl transferase (COMPT) gene polymorphism toward incidence of schizophrenia on Javanese people.

Methods: There were two groups. The first group was Javanese schizophrenia patients, and the second group was not schizophrenia patients (control group). Each group contains 25 patients. The sample was taken from blood vein patients. Deoxyribonucleic acid (DNA) isolation was done using DNA isolation kit (Qiagen®). The Polymerase chain reaction (PCR) was done by RFLP-PCR. The procedure test followed: 10 ml PCR product add 2ml PCR buffer (10x buffer) and 1ml of an enzyme of Hin1 II (10U/ml) and 7ml dH2O (total 20 ml) over 37 °C for 15-20 min followed inactivation 80 °C for 5 min. The digestion products were digested by Hin1 II enzyme. The result of digestion can be seen in fig. 1.

Results: The results of this study showed that 64 % HH allele and 36 % LH allele of COMPT gene (G21881A) were found on Javanese schizophrenia while 76 % HH and 24 % LH allele were found on the control group. Odd ratio (OR) LH allele was 1,781 and OR HH allele was 0,561.

Conclusion: The presence of LH allele of COMPT gene A1625G increases the risk of schizophrenia on Javanese people. The COMPT gene (G21881A) is a genetic risk factor for Schizophrenia disease in Javanese people.

Keywords: Schizophrenia, Javanese, COMPT gene

From fig. 1, it can be seen that single band (108bp) show homozygous genotype (with high activity allele, HH). Heterozygous LH (characteristic by 3 fragments, 108 bp, 72bp and 36bp). There is no found homozygous allele with low activity of allele (2 fragments, 72bp & 36bp). From 50 samples of the schizophrenia and control groups, we get the result as described in table 1.

Schizophrenia is a mental disorder that characterized by more than two of the symptoms as follows: delusion, hallucinations, speech disorder (disorganization speech), catatonic behavior and the presence of negative symptoms [10]. Prevalence of this disease in Indonesia is 0.3-1 %. This disease usually attacks people within 18-45 y old [11].

Several genes were suspected as genetic markers of this disease. COMT (Cathecol O-methyl transferase) gene was suspected as risk factor of several diseases. Polymorphism of COMPT gene which causes substitution of valin to methionine (COMPT G21881A) increases risk of schizophrenia disease [9]. DTNBP1 (dystrobrein binding protein 1) gene is a gene located in chromosome 6p22.3.
This gene was also alleged as a risk factor of schizophrenia. There is low level of dysbindin in schizophrenia people [12]. The polymorphism of DTNBP1 gene A1625G influences schizophrenia incidence [13]. This polymorphism was detected by PCR-RFLP Method causes substitution of valine to methionine (Val 158 met) [14].

<table>
<thead>
<tr>
<th>Allele</th>
<th>Schizophrenia</th>
<th>Control</th>
<th>Odds ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>HH allele</td>
<td>16 (64 %)</td>
<td>19 (76 %)</td>
<td>0.561</td>
</tr>
<tr>
<td>LH allele</td>
<td>9 (36 %)</td>
<td>6 (24 %)</td>
<td>1.781</td>
</tr>
<tr>
<td>LL allele</td>
<td>0 (0 %)</td>
<td>0 (0 %)</td>
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From table 1, it can be seen that the number LH allele on schizophrenia more than control (36 % vs 24 %) with OR 1.781.

Polymorphism of COMPT gene alters the activity of COMPT. The HH allele is the high activity of COMPT gene allele. Meanwhile LL allele is low activity COMPT gene allele [8]. Low allele of COMPT (LL) has methionine/methionine genotype. High allele (HH) is valine/valine genotype [15]. The catechol O-methyl transferase is an enzyme that involved in clearance of dopamine. This gene was suspected as a candidate gene for schizophrenia [16]. The low activity of this allele would be associated with schizophrenia [17]. This research found that heterozygous LH allele of COMPT gene of Javanese schizophrenia people was more than the control group (36 % vs 24 %).

The presence of LH allele of COMPT gene A1625G increases risk of schizophrenia on Javanese people

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CONFLICT OF INTERESTS
Declared none

REFERENCES