I. ................................. 5
II. ................................. 7
  1. ................................. 7
  2. ................................. 7
    ................................. 7
    ................................. 8
    ................................. 8
    ................................. 9
III. ................................. 10
  1. ................................. 10
  2. ................................. 11
    ................................. 11
    ................................. 13
    ................................. 14
    ................................. 15
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      (2) ................................. 16
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2. Age distribution in 123 patients with cerebral infarction ………………………………………12

3. Risk factors in 123 patients with cerebral infarction ………………………………………………14

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7. Risk factors of 148 patients with intracerebral hemorrhage and 213 patients with subarachnoid hemorrhage ……………………………………………………………18

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1. Age distribution of young adults patients with stroke in young adults .........................................................11
2. Sex ratio of 123 patients with cerebral infarction
......................................................................................12
1. 2903 484 (16.7%) 123 9.1%, 361 23.4%, 3 (19.2%), 213 (56.2%), 148 (43.8%).

2. 61.2: 38.8 1.6 41 45 197 (40.7%).

3. TOAST large artery atherosclerosis 34 (27.6%), small vessel occlusion 23 (19.2%), undetermined causes 23 (19.2%), other determined cause 22 (17.9%), cardioembolism 21 (17.1%).

4. 43 (37.7%), 38 (30.9%)
18. large artery atherosclerosis, 12 small vessel occlusion.

5. 40 (46.2%), 41 (59.5%).

6. 65 (43.9%), 38 (25.7%).

7. 197 (92.5%).

8. 41 45 40 41 45.
large artery atherosclerosis, small artery occlusion, diabetes, hypertension, obesity
5. §§

I. §

30%²ì³úÁ¹Áß ÀГ€±ø ÀГÈø ÀÇ°í µÇ°í ÀÖ´Ù. Àë°ÎºÐ ÈÄÀ¯ÁõÀ» ³²±â °í Àç¹ßÀÇ À§Ç輺ÀÌ ÀÖ´Â ³úÁ¹Áß ¿¹¹æ¿¡ µµ¿òÀÌ µÉ °¡´É¼ºÀÌ ³ô¾ÆÁö¹Ç·Î ÀÌ¿¡ °üÇÑ °CRT±¸¿Í ¹®Á¦¸¦ ³Ñ¾î¼­ °¡Á·°ú »çȸ¿¡µµ Å« ¿µÇâÀ» ¹ÌÄ¡´Â Áß¿äÇÑ »ç°ÇÀ̸ç, ¿øÀÎÀ» Å« ÀÖ´Â °æ½Äµµ ½ÉÃÊÀ½ÆÄ °Ë»ç(transesophageal echocardiography, TEE), Àڱ⠰ø¸í ³úÇ÷°ü ÃÔ¿µ(conventional cerebral angiography), Àڱ⠰ø¸í ³úÇ÷°ü ÃÔ¿µ(MR angiography, MRA)°ú °¢Á¾ Ư¼öÇ÷¾× °Ë»ç°¡ ½ÃÇàµÊÀ¸·Î¼­ ¿øÀÎÀ» Å«
II. 以上の 1. 1995년 1월 1일부터 1999년 12월 31일까지의 자료를 토대로 1999년 12월 31일 끝까지 4년 동안의 연구가 이루어졌다. 15년까지 45년까지의 자료는 484명의 환자에서 큰 차이가 없었다.

2. 1999년에 484명의 환자 중 50% 이상의 환자는 치료를 받았다. 그들 중 484명의 환자에서 치료를 받았던 환자의 비율을 통해 TOAST (Trial of ORG 10172 in Acute Stroke Treatment) 의 29% 및 45%의 1) large-artery atherosclerosis(LA), 2) small-vessel occlusion or lacune(lacune), 3) cardioembolism(CE), 4) other determined cause(other), 5) undetermined
causes(undetermined)  ⼀，⿰，⿱，⿲，⿳，⿴，⿵，⿶，⿷，⿸，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，⿺，⿹，escort. 

24á，áôá，áöáúáöá"ñáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáöáúáö́
CBC, ESR, VDRL, ANA, anti-DNA, RF, anti-Ro, anti-La, ASO, total cholesterol, triglyceride, high density lipoprotein, PT, PTT, antiphospholipid antibody, lupus anticoagulant, anticardiolipin antibody, antithrombin III, 24-hour blood pressure, transthoracic echocardiography, transesophageal echocardiography, computed tomogram, magnetic resonance image, MRA.
Table 1. Sex ratio of young adult patients with stroke

<table>
<thead>
<tr>
<th>Type of Stroke</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cerebral infarction</td>
<td>76 (61.8)</td>
<td>47 (38.2)</td>
<td>123</td>
</tr>
<tr>
<td>Intracerebral hemorrhage</td>
<td>90 (60.8)</td>
<td>58 (39.2)</td>
<td>148</td>
</tr>
<tr>
<td>Subarachnoid hemorrhage</td>
<td>130 (61.0)</td>
<td>83 (39.0)</td>
<td>213</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>296 (61.2)</td>
<td>188 (38.8)</td>
<td>484</td>
</tr>
</tbody>
</table>
Fig 1. Age distribution of young adult patients with stroke.
CI: cerebral infarction
SAH: subarachnoid hemorrhage
ICH: intracerebral hemorrhage

2. TOAST

TOAST 123 34 (27.6%), lacune 23 (19.2%), undetermined 23
other 22 (17.9%), CE 21 (17.1%), LA 15-20 21-25 26-30 31-35 36-40 41-45
(Figure 2).
Figure 2. Sex ratio of 123 patients with cerebral infarction.

LA: large artery atherosclerosis
Lacune: small artery occlusion
CE: cardioembolism
Other: other determined cause
Undetermined: undetermined causes
Numbers in parentheses are percentage

<table>
<thead>
<tr>
<th>Age</th>
<th>LA</th>
<th>Lacune</th>
<th>CE</th>
<th>Other</th>
<th>Undetermined</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-30</td>
<td>4 (11.8)</td>
<td>1 (4.3)</td>
<td>5 (32.8)</td>
<td>10 (45.5)</td>
<td>2 (8.7)</td>
</tr>
<tr>
<td>31-40</td>
<td>12 (35.3)</td>
<td>8 (34.8)</td>
<td>10 (47.6)</td>
<td>10 (45.5)</td>
<td>11 (47.8)</td>
</tr>
<tr>
<td>41-45</td>
<td>18 (52.9)</td>
<td>14 (60.9)</td>
<td>6 (28.6)</td>
<td>2 (9.0)</td>
<td>10 (43.5)</td>
</tr>
<tr>
<td>Total</td>
<td>34 (100)</td>
<td>23 (100)</td>
<td>21 (100)</td>
<td>22 (100)</td>
<td>23 (100)</td>
</tr>
</tbody>
</table>

LA: large artery atherosclerosis
Lacune: small artery occlusion
CE: cardioembolism
Other: other determined cause
Undetermined: undetermined causes
Numbers in parentheses are percentage
CE 31% 45% 76.2% other 18% LA, 14% lacune 32% (64%) undetermined 19% 7% (36.8%) 6% (27.3%)

TOAST Table 3° 43% (37.7%) 38% (30.9%) 43% 58.1% 38% 18% LA, 12% lacune 21% 5%
Table 3. Risk factors in 123 patients with cerebral infarction

<table>
<thead>
<tr>
<th>Risk factors</th>
<th>HT</th>
<th>DM</th>
<th>Smoking</th>
<th>A. fib</th>
<th>Hyperlipidemia</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA (n=34)</td>
<td>18/34</td>
<td>8/34</td>
<td>17/32</td>
<td>0/34</td>
<td>15/33</td>
</tr>
<tr>
<td></td>
<td>(52.9)</td>
<td>(23.5)</td>
<td>(53.1)</td>
<td>(0)</td>
<td>(45.5)</td>
</tr>
<tr>
<td>Lacune (n=23)</td>
<td>12/23</td>
<td>3/23</td>
<td>13/23</td>
<td>0/23</td>
<td>11/23</td>
</tr>
<tr>
<td></td>
<td>(52.2)</td>
<td>(13.0)</td>
<td>(56.5)</td>
<td>(0)</td>
<td>(47.8)</td>
</tr>
<tr>
<td>CE (n=21)</td>
<td>1/21</td>
<td>0/21</td>
<td>1/18</td>
<td>5/21</td>
<td>1/21</td>
</tr>
<tr>
<td></td>
<td>(4.8)</td>
<td>(0)</td>
<td>(5.6)</td>
<td>(23.8)</td>
<td>(4.8)</td>
</tr>
<tr>
<td>Other (n=22)</td>
<td>1/22</td>
<td>0/22</td>
<td>6/22</td>
<td>0/22</td>
<td>1/22</td>
</tr>
<tr>
<td></td>
<td>(4.5)</td>
<td>(0)</td>
<td>(27.3)</td>
<td>(0)</td>
<td>(4.5)</td>
</tr>
<tr>
<td>Undetermined</td>
<td>6/23</td>
<td>0/23</td>
<td>6/19</td>
<td>1/23</td>
<td>7/23</td>
</tr>
<tr>
<td></td>
<td>(26.1)</td>
<td>(0)</td>
<td>(31.6)</td>
<td>(4.3)</td>
<td>(30.4)</td>
</tr>
<tr>
<td>Total (n=123)</td>
<td>38/123</td>
<td>11/123</td>
<td>43/114</td>
<td>6/123</td>
<td>35/122</td>
</tr>
<tr>
<td></td>
<td>(30.9)</td>
<td>(8.9)</td>
<td>(37.7)</td>
<td>(4.9)</td>
<td>(28.7)</td>
</tr>
</tbody>
</table>

HT: hypertension, DM: diabetes mellitus, A. fib: atrial fibrillation
LA: large artery atherosclerosis
Lacune: small artery occlusion
CE: cardioembolism
Other: other determined cause
Undetermined: undetermined causes
Numbers in parentheses are percentage
Numbers in denominators are numbers of evaluated patients
### Table 4. Involved vascular territories in 123 patients with cerebral infarction

<table>
<thead>
<tr>
<th>Vascular territories</th>
<th>Nb</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anterior circulation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anterior cerebral artery</td>
<td>3</td>
<td>(2.4)</td>
</tr>
<tr>
<td>Middle cerebral artery</td>
<td>73</td>
<td>(59.3)</td>
</tr>
<tr>
<td>Internal carotid artery</td>
<td>2</td>
<td>(1.6)</td>
</tr>
<tr>
<td><strong>Posterior circulation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posterior cerebral artery</td>
<td>9</td>
<td>(7.3)</td>
</tr>
<tr>
<td>Vertebral artery</td>
<td>31</td>
<td>(25.2)</td>
</tr>
<tr>
<td><strong>Multiple</strong></td>
<td>3</td>
<td>(2.4)</td>
</tr>
</tbody>
</table>

(1) 

(1) 

The involved vascular territories in 123 patients with cerebral infarction show that 90 patients (74.4%) have normal findings, 67 patients (54.3%) have mitral stenosis.

#### Table 5. Echocardiographic findings in 90 patients with cerebral infarction

<table>
<thead>
<tr>
<th>Findings</th>
<th>Nb</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mitral stenosis</td>
<td>11</td>
<td>(12.2)</td>
</tr>
<tr>
<td>Swirling</td>
<td>3</td>
<td>(3.3)</td>
</tr>
<tr>
<td>Mitral regurgitation, Tricuspid regurgitation</td>
<td>3</td>
<td>(3.3)</td>
</tr>
<tr>
<td>Ventricular septal defect</td>
<td>2</td>
<td>(2.2)</td>
</tr>
<tr>
<td>Atrial septal defect, Tetrology of Fallot</td>
<td>1</td>
<td>(1.1)</td>
</tr>
<tr>
<td>Patent foramen ovale</td>
<td>3</td>
<td>(3.3)</td>
</tr>
<tr>
<td>Normal</td>
<td>67</td>
<td>(74.4)</td>
</tr>
</tbody>
</table>
2. 

Table 6. Angiographic findings in 99 patients with cerebral infarction

<table>
<thead>
<tr>
<th>Findings</th>
<th>Nb (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abnormal</td>
<td></td>
</tr>
<tr>
<td>Atherosclerosis</td>
<td>42 (42.4)</td>
</tr>
<tr>
<td>Relevant arterial lesion</td>
<td>40 (40.4)</td>
</tr>
<tr>
<td>Irrelevant arterial lesion</td>
<td>5 (5.1)</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>Dissection</td>
<td>7 (7.1)</td>
</tr>
<tr>
<td>Moyamoya</td>
<td>3 (3.0)</td>
</tr>
<tr>
<td>Vasculitis</td>
<td>2 (2.0)</td>
</tr>
<tr>
<td>Normal</td>
<td>40 (40.4)</td>
</tr>
</tbody>
</table>

(1) 

(2)
(59.5%)·Î °¡Àå ¸¹¾Ò°í ·Î °¡Àå °ú °°·Î°í. 

(2) ¿øÀÎ ¹× À§ÇèÀÎÀÚ

Äë¿î À× ¿øÀÎÀ»·Î ´Ø À§ÇèÀÎÀÚ (AVM: arteriovenous malformation)·Î 56·Ê (37.8%)·Î °¡Àå °ú °°·Î°í À§ÇèÀÎÀÚ (hypertension)·Î 45·Ê (30.4%)·Î °ú °°·Î°í. ·Î À× À§ ÇèÀÎÀÚ °ú °°·Î°í À§ ÇèÀÎÀÚ (CM: cavernous malformation)·Î 10·Ê, 7·Ê 9·Ê 10·Ê, 10·Ê (tumor)·Î 10·Ê, 7·Ê 9·Ê (coagulopathy)·Î 8·Ê, À× À§ ÇèÀÎÀÚ (eclampsia)·Î 3·Ê, 7·Ê 9·Ê À× À§ ÇèÀÎÀÚ 6·Ê. ·Î À× À§ ÇèÀÎÀÚ Table 7. ·Î °ú °°·Î°í. 

(3) ¹ß»ý ºÎÀ§

Äë¿î À× 148·Ê 7·Ê 9·Ê (lobar hemorrhage)·Î 65·Ê (43.9%) À× 38·Ê (25.7%)·Î 7·Ê 9·Ê, 11·Ê À× À§ ÏÅ À× À§ ÇèÀÎÀÚ (Table 8).
Table 7. Risk factors of 148 patients with intracerebral hemorrhage and 213 patients with subarachnoid hemorrhage

<table>
<thead>
<tr>
<th>Age</th>
<th>Hypertension (%)</th>
<th>DM (%)</th>
<th>Hyperlipidemia (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-30</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>31-40</td>
<td>22</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>41-45</td>
<td>23</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>SAH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-30</td>
<td>5</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>31-40</td>
<td>20</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>41-45</td>
<td>40</td>
<td>3</td>
<td>9</td>
</tr>
</tbody>
</table>

ICH: intracerebral hemorrhage, SAH: subarachnoid hemorrhage, DM: diabetes mellitus

Table 8. Lesion sites of 148 patients with intracerebral hemorrhage

<table>
<thead>
<tr>
<th>Sites</th>
<th>No</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lobar</td>
<td>65</td>
<td>(43.9)</td>
</tr>
<tr>
<td>Frontal</td>
<td>20</td>
<td>(13.5)</td>
</tr>
<tr>
<td>Parietal</td>
<td>22</td>
<td>(14.9)</td>
</tr>
<tr>
<td>Temporal</td>
<td>15</td>
<td>(10.1)</td>
</tr>
<tr>
<td>Occipital</td>
<td>8</td>
<td>(5.4 )</td>
</tr>
<tr>
<td>Basal ganglia</td>
<td>38</td>
<td>(25.7)</td>
</tr>
<tr>
<td>Thalamus</td>
<td>11</td>
<td>(7.4 )</td>
</tr>
<tr>
<td>Cerebellum</td>
<td>11</td>
<td>(7.4 )</td>
</tr>
<tr>
<td>Pons</td>
<td>9</td>
<td>(6.1 )</td>
</tr>
<tr>
<td>Ventricle</td>
<td>5</td>
<td>(3.4 )</td>
</tr>
</tbody>
</table>

ICH: intracerebral hemorrhage, SAH: subarachnoid hemorrhage, DM: diabetes mellitus
(1)  

19．

(2)  

213 197 (92.5%), 12 (5.6%)  2 1 3 1 30.5%, 8.9%.

(3)  

213 82 (38.5%)
±³Åë µ¿¸Æ¿¡ À§Ä¡ ÇÏ¿´°í ´ÙÀ½À¸·Î´Â Áß´ë³ú µ¿¸ÆÀÌ 41Ê, ¶À±ç 41Ê, 26Ê,
ÈÄ ±³Åë µ¿¸ÆÀÌ 23Ê, ¶À±ç 23Ê, 17Ê¿´´Ù. 12Ê¿¡¼­´Â ¿ø¹ß¼º ÁöÁÖ¸·ÇÏ Àü³ú µ¿¸Æ¿¡ µ¿¸Æ·ù°¡
ÀÖ¾ú´ø °æ¿ì°¡ 7Ê ÀÖ¾ú´Ù.
IV. 

21, 24, 33 µÎÅë 10-11, ÀӽŠ¹× ÁÖ»ê±â 12-13, °æ±¸¿ë ÇÇÀÓ¾à º¹¿ë 14-15 ±×¸®°í ÁÖÁ¤ Áßµ¶ 16, µ¿Á¤¸Æ ±â Çü 17-18 µîÀÌ ÁÖµÈ ¿øÀÎÀ̳ª À§ÇèÀÎÀÚ·Î ÀÛ¿ëÇÑ´Ù. ±×·¯³ª º» ¿¬±¸¸¦ ºñ·ÔÇÑ ±¹³» ¿¬±¸µé 22-
22

44.1% - 58.9%  

Kwon 32 75.2% 61.8%  

72% 58% 50% 38%  

36.8% 28.6%  

111% 74% 43% (58.1%)  

Kwon 32 67%  

TOAST  LA lacune  

Barinagarren 39 3%  

Bogousslavsky 7.9%  Neto 21%  Adam 20  

29.8% Carolei 33.1%
Kwon 32\%, Kristensen 38.2\%, Adams 27.7\%.

Lacune 32\%, cardioembolism 31.7\%, nonatherosclerotic vasculopathy, others.
undetermined cause [40].

The authors [41] reported in 2011 that Ruis et al. [40] analyzed 40 patients with a stroke and found that 53% were of cardiac origin, 47% were of arterial origin, 11% were of other causes, 20% were of venous origin, 35%, 13%, 10%, 22%, 61%, 39%.
160개 중 57개 (43.2%), 160개 중 220개 중 60개 (45.5%), 220개 중 15개 (11.4%)의 데이터를 이용하여 43.2%의 정확도를 나타내었습니다. 이 결과는 다른 연구와 비교하여 Consistent, Suh 42의 35개 중 59개의 정확도를 보이며, 본 연구의 결과는 30.5%의 정확도를 보였습니다. Biller 43의 연구에서는 13.7%의 정확도를 보였습니다. 이러한 결과는 본 연구의 결과와는 대조적이며, 추가적인 연구가 필요할 것으로 생각됩니다.
V. 1995年 1月 1日 至 1999年 12月 31日

1. 年平均温度变化情况: 1995年 1月至 1999年 12月, 平均温度为 29.03°C, 比 16.7% 年的平均温度低, 123天 (9.1%) 的温度高于平均温度, 361天 (23.4%) 的温度低于平均温度, 213天, 平均温度为 21.3°C, 148天, 平均温度为 19.6°C.

2. 年平均温差变化情况: 61.2°C, 38.8°C, 平均温差为 1.6°C, 41天, 平均温差为 45°C, 197天 (40.7%) 平均温差为 19°C.
3. TOAST large artery atherosclerosis (LA) 34 (27.6%), small vessel occlusion (Lacune) 23 (19.2%), undetermined causes 23 (19.2%), other determined cause 22 (17.9%), cardioembolism 21 (17.1%).

4. 43 (37.7%), 38 (30.9%) 58.1%, 38 18 large artery atherosclerosis, 12 small vessel occlusion.

5. 40 49 (46.2%), 25 (59.5%), , , .

6. 65 (43.9%), 38 (25.7%).
7. 197 (92.5%) of the patients had large artery atherosclerosis.

8. 41 to 45 years old had the highest incidence of small artery occlusion, with 40 years old being the lowest. Large artery atherosclerosis and small artery occlusion increased with age.


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Abstract

**Risk factors and Clinical characteristics in Young Adult Stroke**

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Although increasing age is the single most important factor that forecasts ischemic and hemorrhagic strokes, stroke is not rare among adolescents and young adults. The leading causes of stroke among elderly persons are intracranial or extracranial atherosclerosis and cardioembolism. However, the causes of stroke among young adults are more diverse. Studies from western countries have shown that in the young age group, cardioembolism and nonatherosclerotic vasculopathies are relatively important causes of ischemic stroke as compared to atherosclerotic vasculopathy and small artery occlusion. To investigate the causes, risk factors and clinical characteristics of cerebral infarction, intracerebral hemorrhage, and subarachnoid hemorrhage in young adults in Korea, we retrospectively reviewed the medical records of all patients aged 15 to 45 years with diagnosis of hemorrhagic or ischemic stroke admitted to the Severence Hospital between January 1, 1995 and December 31, 1999. The results are as follows.

1. The proportion of young adult stroke was 16.7%(484/2903) of all strokes. Distribution of young adult strokes showed cerebral infarction in 123 patients, intracerebral hemorrhage in 148 patients, subarachnoid hemorrhage in 213 patients. In young adults, hemorrhagic stroke was 3 times more common than ischemic stroke.

2. Among them, 296(61.2%) patients were men and 188(38.8%) were women.
40.7% of young adult stroke were in the 41 to 45 age distribution.

3. According to the TOAST classification, 34 patients (27.6%) had large artery atherosclerosis, 23 patients (18.7%) small artery occlusion, 21 patients (17.1%) cardioembolism, 22 patients (17.9%) other determined cause and 23 patients (18.7%) undetermined causes.

4. 43 patients (37.7%) had smoking and 38 patients (30.9%) had hypertension. The prevalence of smoking in men (58.1%) was higher than that in women (0%). More than 50% of large artery atherosclerosis and small artery occlusion group had smoking and hypertension.

5. Arteriovenous malformation was the most common causes of ICH in patients younger than 40 years, while hypertension was the most common in those between 41 and 45 years. Other causes included coagulopathy, moyamoya disease, tumor, eclampsia.

6. Intracerebral hemorrhages in young adults were mainly lobar (43.9%) in location.

7. Ruptured aneurysms (92.5%) are the leading cause of spontaneous subarachnoid hemorrhage. Aneurysmal sacs were found most frequently in the anterior communicating artery in location.

8. The risk factors and the patterns of the stroke in the age group of 41 to 45 years were similar to those in old ages. This suggest that the age definition of young adult stroke should be reconsidered.

In conclusion, the type and the risk factors of the ischemic stroke in our study were different from those in western, while those of the hemorrhagic stroke were similar between western and ours. Atherosclerosis seemed to be the major mechanism of the ischemic stroke in young Korean adults, which was suggested by the high frequency of large artery atherosclerosis and lacune as well as of hypertension and smoking. This may be attributed to the high proportion of patients in the age between 41 and 45, who showed similar patterns of the stroke type and risk factors to those of old ages.

Key words: young adult, stroke, risk factors, atherosclerosis, smoking, hypertension