Gait Analysis of Patients Suffering From Hallux Valgus

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disclosure

NO CONFLICT TO DISCLOSE

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Our disclosures are in the Final AOFAS Mobile App.
We have no potential conflicts with this presentation.
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- Hallux valgus (HV) is one of the most common forefoot problems.
- HV is defined as hallux valgus angle (HVA) $\geq 20$.
- HV can lead to alterations of the plantar pressure pattern.
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- We investigated the plantar pressure pattern and the gait-related factors using a gait analyzer (Walk way MW 1000; Anima, Tokyo, Japan).

- This study examined the relationship between gait alterations or motor function and HV.
Can you use the hallux ball during toe-off?

- Can use the hallux ball
- Can’t use the hallux ball

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Methods

- In 2009, 309 residents (male, 105; female, 204; age, ≥65 years) of Miyagawa village in Mie, Japan
- The plantar pressure pattern was compared between the subjects who has HV (n=88) and those who doesn’t have HV (n=221).
- Gait-related factors were compared among mild group (20 ≤ HVA <30; n=88), moderate group (30 ≤ HVA <40; n=24), and severe group (HVA, ≥40; n=9).
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Results: Background of the subjects

<table>
<thead>
<tr>
<th>HV grade</th>
<th>Normal (n=221)</th>
<th>Mild (n=55)</th>
<th>Moderate (n=24)</th>
<th>Severe (n=9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVA(°)</td>
<td>&lt; 20</td>
<td>≥ 20, &lt; 30</td>
<td>≥ 30, &lt; 40</td>
<td>≥ 40</td>
</tr>
<tr>
<td>gender(M/F)</td>
<td>91/130</td>
<td>9/46</td>
<td>3/21</td>
<td>1/8</td>
</tr>
<tr>
<td>age(y.o.)</td>
<td>75.1±5.9</td>
<td>76.3±7.2</td>
<td>76.9±6.0</td>
<td>79.0±4.3</td>
</tr>
<tr>
<td>height (cm)</td>
<td>152.3±8.3</td>
<td>150.7±7.2</td>
<td>148.4±6.8</td>
<td>144.2±4.2</td>
</tr>
<tr>
<td>weight (kg)</td>
<td>54.8±9.5</td>
<td>53.1±10.2</td>
<td>49.5±7.8</td>
<td>45.8±8.2</td>
</tr>
</tbody>
</table>

The average height and weight of HV group were significantly lower, and age of HV group were significantly higher than those of normal group.
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About use of hallux ball

Ratio of HV group who can use the hallux ball in toe off were significantly less than those of normal group.

X² test

\[ *p < 0.05, \quad **p < 0.01 \]
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- The gait-related factors were not significantly different between normal group and HV group.

About gait-related factors

![Graph showing step length, step width, foot angle, and gait speed comparisons between normal and HV groups.]

- age/gender/height-adjusted logistic regression analysis
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• **Step width** tended to increase with progression of hallux valgus.

• **Stride** and **gait speed** of severe group were the lowest among 4 groups.

Stride of severe group was significantly shorter than those of normal groups. age/gender/height-adjusted multinomial logistic regression analysis
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Discussion & Conclusions

✔ HV could cause alterations of the plantar pressure pattern.
✔ Mild HV didn’t cause motor functional decline.
✔ Severe HV prevented subjects from pushing off with their toes, resulting in shorter stride.
✔ HV can cause not only gait alterations but also motor functional decline.
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References


