CONCLUSION: Kite method had a low success rate in our series of clubfoot patients, so we do not recommend any more the use of this method for conservative treatment of clubfoot.

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Key words: Congenital clubfoot; Kite method; Ponseti method; Cast treatment

INTRODUCTION

Congenital Clubfoot is the second most common congenital deformity in orthopedics after the congenital hip dysplasia, with an incidence ranging from 0.6 to 6.8 per 1,000 live births\[1-4\] (Figure 1). Ethiological factors suspected for this malformation are: abnormal positioning of the fetus, toxins, temperature, infectious pathogens, medication, electromagnetic radiation but also genetic factors including: chromosomal abnormalities, genes associated with sex, single dominant genes, recessive genes\[5-7\]. The latest Japanese theory indicates that the cause is a neuromuscular dysfunction, in
which there is a partial loss of intraterine innervations and later recovered[8-10]. To explain the etiology of this deformation born, are also made other studies-microscopic histological[11,12]. There is also a theory which connects infectious etiology of clubfoot, with enterovirus infections in the period after conception. This theory is supported by several studies that have found a link to seasonality, with the incidence of clubfoot[13,14]. So, many children with pes equinovarus, born in March-April period, which corresponds to the period of conception in June-July, where the incidence of enterovirus infections is higher.

Three main methods of conservative treatments described in literature are: Kite method, Ponseti Method, French Method. In our Country when it was established the treatment of this pathology by Prof Dr. Panajot Boga was used gradual gentle manipulation and correction according to Kite method. This anomaly consists distortion of the foot with four components: forefoot adduction and supination and heel varus and equinus. Often the cavus element can be added[15-17].

The difference between the Kite and Ponseti method is the point of counterpressure. In the Kite method the point of counterpressure is the calcaneocuboid joint and in the Ponseti Method is the talar neck[18]. Also another difference is that in the Ponseti method the first immobilization of the foot is in supination instead of Kite method which immobilizes the foot in pronation. We are evaluating the results of the Kite method as it is the only existing method of clubfoot treatment in our Institution for more than thirty years. The Ponseti one has just been starting its use in our Hospital and we will publish soon the comparative results between this two method[19].

METHODS

We have studied clinical charts of clubfoot patients treated with Kite method during years 2008-2010 from statistic department of Service of Orthopaedic and Traumatology. This study is only for congenital clubfoot pathology and not those children with spastic or paralytic clubfoot. The average age of onset of treatment is 61 days and shows a late start treatment. The statistical method used is the Fisher-Student test. Accepted error is less than 5% (p<0.05).

RESULTS

This study included 107 patients, of whom 68 were males and 39 females. Seventy four of patients did not need surgery and others had need for surgical intervention. In our country the ratio male: female was 1.7:1. This ratio approximates the international report, reported in the literature of 2:1 in favor of males (Figure 2, 3, 4 and 5).

Table 1

<table>
<thead>
<tr>
<th>Year</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>21</td>
<td>13</td>
<td>34</td>
</tr>
<tr>
<td>2009</td>
<td>23</td>
<td>9</td>
<td>32</td>
</tr>
<tr>
<td>2010</td>
<td>24</td>
<td>17</td>
<td>41</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>39</td>
<td>107</td>
</tr>
</tbody>
</table>

Figure 3 In the period 2008-2010 the total number of patients included in the study is 107.

<table>
<thead>
<tr>
<th>Time</th>
<th>&lt;7 days</th>
<th>8-14 days</th>
<th>15-30 days</th>
<th>1-2 months</th>
<th>2-3 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=treated patients</td>
<td>15</td>
<td>25</td>
<td>32</td>
<td>19</td>
<td>16</td>
</tr>
<tr>
<td>N=success treated patients</td>
<td>14</td>
<td>21</td>
<td>25</td>
<td>10</td>
<td>6</td>
</tr>
</tbody>
</table>

Figure 4 The percentage of success depending on the time of onset of treatment.

DISCUSSIONS

Clubfoot is a congenital pathology that occurs approximately 40 new cases each year are treated in our University Orthopedics,
Traumatology Service. Treatment of this deformation is still a challenge for the physician and cast technician, due to multiple recurrence.

Since the early 60s, when Prof. Panajot Boga codified the conservative treatment of this pathology with Kite method and in our service we have applied only his method. This method consists in conservative treatment with cast by gradual gentle manipulation. Manipulation performed every 7-14 days[20]. Cast is placed below the knee in the first 2-3 sessions. Then made passage of cast over the knee for avoiding the cast scroll and correct the internal tibial torsion (Figure 6).

Cast surfing damages the work achieved. Treatment duration is approximately 6 months and at the end of the first 3 months of treatment, Achilles tenotomy was performed (Figure 7).

Then again placed for 3 months in plaster by changing it every 2-3 weeks. When treatment ends, family members were taught about exercises foot and keeping Denis Brown shoes. These shoes are recommended to be kept for a period of 3 months day and night, except when applied physiotherapy[21-24]. Then held only at bedtime (Figure 8 and 9).

CONFLICT OF INTERESTS

There are no conflicts of interest with regard to the present study.

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