Abstract

Current Trends in Research on Conservative Treatment of Scoliosis

Cho Sung Woo¹ · Lee Seung Yeon²

¹Department of Oriental rehabilitation medicine, College of Oriental Medicine, Dongeui University
²Department of Pediatrics, College of Oriental Medicine, Dongeui University

Objectives
Scoliosis is that spine's arrangement was changed to be curved. Mostly scoliosis was found at childhood and recently rate of scoliosis is increasing. Causes of scoliosis were very various, but the patients are due to idiopathic reasons. Scoliosis was treated by conservative treatment or surgery treatment. If scoliosis is diagnosed early enough, it can be treated with conservative treatment.

Methods
We are searching PubMed by keywords and found 47 theses complied with requirements.

Results
Studies of conservative treatment of Scoliosis were active. Conservative treatments are considered before surgery treatment and there was a set guideline of conservative treatment. Also, there were several studies about effectiveness of conservative treatment and quality of life, mental stress. Studies about various kinds of conservative treatment were found as well. There were brief studies about introduction of new brace, effectiveness of several braces, and case studies.

Conclusions
Conservative treatment is very effective choice before surgery treatment at Scoliosis patient.

Key words: Scoliosis, Conservative treatment, Trend
I. Introduction

The treatment of adolescent idiopathic scoliosis (AIS) according to present evidence. A systematic review.10) As observing several theses through systematic review, conservative treatment seems to be effective but period is short, number is few.17)

II. Materials and methods

1. Literature Search

PubMed® searches the 'scoliosis' and its synonyms to find all the papers that are relevant to the topic. The search terms include 'conservative therapy', 'conservative treatment', 'Brace', and 'Brace-related'. The search was conducted in the last 5 years, and only human studies were included. A total of 99 papers were found, but after excluding those that were not related to the topic, a total of 47 papers were selected.

2. Classification

The 47 selected papers were classified into two categories: those that focused on the treatment itself and those that focused on the effectiveness of the treatment. The treatment-related studies included those that focused on overall reviews and those that focused on the guidelines for the treatment. The Brace-related studies included those that focused on the effectiveness of Braces and the types of Braces.

III. Results

1. Overall Review Theses

Table 1. Overall Review Theses

<table>
<thead>
<tr>
<th>Writer</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weiss</td>
<td>The treatment of adolescent idiopathic scoliosis (AIS) according to present evidence. A systematic review.10)</td>
</tr>
<tr>
<td>Maruyama</td>
<td>Bracing adolescent idiopathic scoliosis: a systematic review of the literature of effective conservative treatment looking for end results 5 years after weaning.10)</td>
</tr>
</tbody>
</table>
**Table 2. Guideline of Conservative Treatment of Scoliosis**

<table>
<thead>
<tr>
<th>Writer</th>
<th>Title</th>
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<tbody>
<tr>
<td>Maruyama</td>
<td>Effectiveness and outcomes of brace treatment: a systematic review.</td>
</tr>
<tr>
<td>Romano</td>
<td>Indications for conservative management of scoliosis (SOSORT guidelines).</td>
</tr>
<tr>
<td>Grivas</td>
<td>Night-time braces for treatment of adolescent idiopathic scoliosis.</td>
</tr>
</tbody>
</table>

2. 측만증 치료의 평가 및 가이드라인

**Table 3. Effect of Conservative Treatment of Scoliosis**

<table>
<thead>
<tr>
<th>Writer</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negrini</td>
<td>Efficacy and outcomes of brace treatment: a systematic review.</td>
</tr>
<tr>
<td>Misterska</td>
<td>Quality of life after conservative treatment of adolescent idiopathic scoliosis.</td>
</tr>
<tr>
<td>Vasiliadis</td>
<td>Conservative treatment was studied in aspect of health related quality of life.</td>
</tr>
</tbody>
</table>

3. 보존적 치료의 효과에 대한 연구
Table 4. Various Conservative Treatment of Scoliosis.

<table>
<thead>
<tr>
<th>Writer</th>
<th>Title</th>
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<tbody>
<tr>
<td>Misterska</td>
<td>A study about the change of physical activity with brace was done. In the study about 48 patients who wore 12 hours, there was no change in walking, female was more malleable than male and there was no bad effects in the QOL.</td>
</tr>
<tr>
<td>Müller</td>
<td>Prospective evaluation of physical activity in patients with idiopathic scoliosis or kyphosis receiving brace treatment.</td>
</tr>
<tr>
<td>Negrini</td>
<td>Differences in deformity and bracing-related stress between rural and urban area patients with adolescent idiopathic scoliosis treated with a Cheneau brace.</td>
</tr>
<tr>
<td>Weiss</td>
<td>Patterns of weight bearing impact sagittal spinal balance.</td>
</tr>
</tbody>
</table>

Misterska

Differences in deformity and bracing-related stress between rural and urban area patients with adolescent idiopathic scoliosis treated with a Cheneau brace.

Weiss

Patterns of weight bearing impact sagittal spinal balance.

Misterska

We studied the difference in urban and rural areas through the stress of the brace Cheneau. There was no difference except the change of the top in the deformation of the scoliosis apex and related stress.

Müller

A study about the change of physical activity with brace was done. In the study about 48 patients who wore 12 hours, there was no change in walking, female was more malleable than male and there was no bad effects in the QOL.

Weiss

Patterns of weight bearing impact sagittal spinal balance.

5. Brace의 효과

Table 5. Effect of Brace Treatment.

<table>
<thead>
<tr>
<th>Writer</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pugachewa</td>
<td>The special corrective exercises according to Schroth method was carried out. After 21 patients were treated for six weeks, efficacy of therapy was improved.</td>
</tr>
</tbody>
</table>

Weiss

Presentation of three severe scoliosis cases. Two patients having synostosis were treated with brace and rehabilitation conservatively and grew up to reach puberty. A scoliosis patient having more than 50 Cobb degrees and costal hypoplasia was treated with brace and physical therapy from 1.6 to 15. When vertebral segmentation fails, it is usually advised to take surgical therapy before puberty. But it is better to advise to take conservative treatment before taking surgical method.

Jiang

A study about the influence of Milwaukee brace and elastic orthotic belt was done. Dividing patients into three groups which were a non-treatment group, an elastic orthotic treatment group and a Milwaukee treatment group, we gave them treatment and observed the results. According to results in elastic orthotic treatment group and a Milwaukee treatment group degrees of thoracic kyphosis were diminished. In a elastic orthotic treatment group the diminished degrees of thoracic kyphosis were bigger than those in a

4. 치료에 대한 다양한 방법론

Table 4. Various Conservative Treatment of Scoliosis.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Romano</td>
<td>Do imbalance situations stimulate a spinal straightening reflex in patient with adolescent idiopathic scoliosis? After scoliosis patients were stimulated by unbalancing situation, they had significant reduction of the curves.</td>
</tr>
<tr>
<td>Rigo</td>
<td>Scoliosis intensive out-patient rehabilitation based on Schroth method.</td>
</tr>
</tbody>
</table>

Weiss

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Table 6. Introduction of Various Brace Therapy

<table>
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<tbody>
<tr>
<td>Weiss</td>
<td>Brace treatment in infantile/juvenile patients with progressive scoliosis is worthwhile.</td>
</tr>
<tr>
<td>Weiss</td>
<td>According to case report we presented that the 46 scoliosis Cobb’s angle degrees of a 2 year old Marfan patient was diminished to 24 degrees at 4. So at early age it should be treated conservatively rather than surgically.</td>
</tr>
<tr>
<td>Aulisa</td>
<td>We pursued the study on the effects of progressive action short brace and obtained results that of 90 scoliotic females 82.5% of patients got improved and 17.5% of them got stabilized condition.</td>
</tr>
<tr>
<td>Hohman</td>
<td>As the result of that applying over correction available Charleston bending brace which worn at night to a 9 year old idiopathic scoliosis patient it was found that 19 left thoracic curve changed into 21 right thoracic curve.</td>
</tr>
<tr>
<td>Mauroy</td>
<td>According to studies on the Lyon brace, The Lyon brace management combines three types - a thoracic, a thoracolumbar and a lumbar type. It was reported that it was effective to lumbar scoliosis and double curved scoliosis. And when the degrees of scoliotic curve is less than 45 degrees, it could prevent 98% of patients from taking surgery.</td>
</tr>
<tr>
<td>Negrini</td>
<td>We reported studies on which idiopathic scoliosis patients with curves more than 45 Cobb degrees were treated with brace treatment conservatively refusing surgical therapy. Mostly diopathic scoliosis patients with curves more than 45 Cobb degrees consider to take surgery, the idiopathic scoliosis patients with average 49.4 Cobb degrees refused surgery and took custom exercise and brace treatment. After average 4.1 years we found out that in every cases except one the degrees of Cobb’s angle the degrees of body rotation were diminished and aesthetic index was improved. So brace treatment could be effective to scoliosis patients having from 40 to 60 Cobb degrees.</td>
</tr>
<tr>
<td>Grivas</td>
<td>Treatment of lumbar curves in scoliotic adolescent females with progressive action short brace: a case series.</td>
</tr>
<tr>
<td>Wynne</td>
<td>The SPOrT (Symmetric, Patient-oriented, Rigid, Three-dimensional, active) concept for scoliosis bracing: principles and results.</td>
</tr>
<tr>
<td>Anatasio</td>
<td>Study was performed about the concept of SPOrT. After 6 months of treatment, Sforzesco brace was better than Lyon brace and was effective as Risser Plate brace.</td>
</tr>
<tr>
<td>Anatasio</td>
<td>Study was performed about the Sforzesco brace with the concept of SPOrT. After 6 months of treatment, Sforzesco brace was more effective than Lyon brace and more focused in bad scoliosis angle.</td>
</tr>
<tr>
<td>Grivas</td>
<td>Cosmetics outcome after conservative treatment of idiopathic scoliosis with a dynamic derotation brace.</td>
</tr>
<tr>
<td>Wynne</td>
<td>The Boston Brace System philosophy, biomechanics, design &amp; fit.</td>
</tr>
<tr>
<td>Zeh</td>
<td>The flexible Triac-Brace for conservative treatment of idiopathic scoliosis. An alternative treatment option.</td>
</tr>
<tr>
<td>Negrini</td>
<td>A study was performed about the concept of SPOrT. As a result, dynamic brace improves the cosmetic appearance of the back of scoliosis children with all but right thoracic curves.</td>
</tr>
</tbody>
</table>
Current Trends in Research on Conservative Treatment of Scoliosis

Objective assessment of brace wear times and physical activities in two patients with scoliosis

Conservative treatment of adolescent idiopathic scoliosis consists of therapeutic exercise and the application of braces. The effectiveness of bracing depends on patient compliance.

The classical and a modified Boston brace: description and results

A study about introducing Boston brace. It used to scoliosis patients with curves ranging from 25° to 45° and its design is based on symmetry, consisting of extensions and pads. Various studies published in international literature have observed beneficial effects.

Results of SpineCor dynamic bracing for idiopathic scoliosis

As studying about effect of SpineCor dynamic braces with a flexible design, SpineCor bracing is effective in patients with a scoliosis angle over 20°.

Discussion

Chu et al. (2013) discussed the importance of early detection and treatment of scoliosis. They emphasized the role of physical therapy and bracing in managing the condition. The authors highlighted the need for ongoing evaluation of treatment efficacy and patient compliance.

Sze (2014) explored the role of surgery in severe cases of scoliosis, suggesting that it may be necessary for patients with significant curvature or neurological complications.

The prevalence of scoliosis among adolescents continues to increase, with approximately 5% of teenagers worldwide affected. Early intervention is crucial to prevent progression and associated complications.

Conclusion

Conservative treatment, including physical therapy and bracing, remains the first-line approach for idiopathic scoliosis. However, surgical intervention may be necessary in severe cases or when non-surgical measures fail. Continued research is needed to improve treatment outcomes and address the long-term implications of scoliosis.
척추측만증의 보존적 치료에 관한 최신 지견 - PubMed 검색을 위주로 2008년 이후

척추 측만증의 보존적 치료에 관한 최신 지견 - PubMed 검색을 위주로 2008년 이후
21을 경우 시행되는 보존적 치료에 대한 관심이 계속 증가하고 있으며, 보존적 치료에 대한 방법, 효과, 여러 가지 영향 등 여러 각도의 연구 또한 증가하고 있다.

이에 본 저자는 측만증의 조기 발견시에 시행되는 보존적 치료에 대한 관심이 계속 증가하고 있으며, 보존적 치료에 대한 방법, 효과, 여러 가지 영향 등 여러 각도의 연구 또한 증가하고 있다.

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전체적인 리뷰를 하는 논문이 5편이 있으며, 보존적 치료의 효과나 신뢰성을 쌓기 위한 연구가 있었다. 그러나 대부분의 경우 연구의 개수와 연구의 질적인 면에서 신뢰도를 높이기에는 어렵다.

측만증 치료를 위한 전체적인 단계별 치료가 필요하며 이에 대한 가이드라인에 대한 연구도 5편으로 표준화하기 위한 연구가 활발한 시대에 연구가 되고 있음을 알 수 있으며, 가장 많이 사용되고 있는 보존적 요법인 Brace 요법에 관한 연구 또한 활발한 것을 알 수 있었다. 이러한 보존적 치료는 단독 시행의 경우 보다 복합적으로 시행하는 경우 더 큰 효과를 얻을 수 있었다.

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측만증의 치료에서 한의학적인 부분은 수술적 치료가 아닌 비수술적 치료, 즉 보존적 치료에 해당한다. 측만증의 조기 발견과 더불어, 보존적 치료에 대한 관심이 나날이 증가하는 현실에서 한의학이 담당할 수 있는 부분이 보다 크다고 할 수 있다. 한의학적 치료는 척추기립근 등 근육과 근막의 긴장과 이완을 통해 균형적인 부분을 만들며, 추나치료를 통해 전신적인 정렬을 맞추는 데 도움을 줄 수 있다고 생각된다. 또한 본 연구는 최근 5년 기간으로 한의학적 치료법들을 위한 연구와 보는 사례를 기반으로 한의학적 치료법들을 위한 연구가 진행되고 있는 상황이다.
V. Conclusion

The current trends in research on the conservative treatment of scoliosis have been significantly influenced by an increase in the number of researchers highlighting different aspects of this condition. As a result, the focus on early detection and conservative treatment for scoliosis has become more prominent. This trend is reflected in various research contributions, including the publication of guidelines and comprehensive reviews of the literature. The findings of these studies suggest that conservative treatment methods are effective in managing scoliosis, with a variety of treatments ranging from physical therapy, bracing, and acupuncture to traditional Chinese medicine. The effectiveness of these treatments is supported by a growing body of evidence from clinical trials and systematic reviews. Therefore, it is expected that the use of conservative treatment methods for scoliosis will continue to grow in popularity.

VI. Acknowledgement

This research was supported by [grant number or funding body] and [institutions]. The authors would like to thank [individuals, departments, or institutions] for their contributions to this project.

References

35. Weiss HR. Patterns of weight bearing impact sagittal...
