J Shoulder Elbow Surg (2017) ■■, ■■–■■

ELSEVIER

Journal of Shoulder and Elbow Surgery

www.elsevier.com/locate/ymse

ORIGINAL ARTICLE

Outcome of conservative treatment for Little League shoulder in young baseball players: factors related to incomplete return to baseball and recurrence of pain

Mikio Harada, MD, PhD[a,*], Masatoshi Takahara, MD, PhD[a], Masahiro Maruyama, MD[b], Mikiro Kondo, MD[a], Tomohiro Uno, MD[b], Michiaki Takagi, MD, PhD[b], Nariyuki Mura, MD, PhD[c]

[a]*Center for Hand, Elbow, and Sports Medicine, Izumi Orthopedic Hospital, Sendai, Japan*
[b]*Department of Orthopedic Surgery, Yamagata University Faculty of Medicine, Yamagata, Japan*
[c]*Department of Orthopedic Surgery, Yoshioka Hospital, Tendo, Japan*

Background: The purpose of this study was to investigate the factors associated with poor results and pain recurrence in young baseball players with Little League shoulder (LLS).
Methods: Eighty-seven young baseball players with LLS (mean age, 12.1 years) underwent conservative treatment. Of the players, 68 (78%) underwent conservative treatment involving the prohibition of throwing for an average of 1.2 months whereas the remaining 19 (22%) continued throwing with limitations. We analyzed the factors associated with poor results at 2 months and pain recurrence.
Results: At 2 months, 18% of participants reported the presence of pain, and the results regarding the return to baseball were as follows: complete return in 43%, incomplete return in 33%, and no return in 24%. A total of 83 subjects (95%) had completely returned at an average of 2.8 months. Pain recurrence was present in 20 subjects (25%) at an average of 6.2 months. Statistical analysis showed that the following factors were significantly associated with poor results at 2 months: longer period from initial presentation to throwing prohibition and worse shoulder flexibility ($P = .04$ and $P = .01$, respectively). It also revealed that the following factors were significantly associated with pain recurrence: higher frequency of pain at 2 months and longer duration until complete return ($P = .0003$ and $P = .04$, respectively).
Conclusions: It is important for subjects with LLS to be prohibited from throwing immediately after initial presentation. Good shoulder flexibility was associated with a return to baseball without pain. A complete return in subjects who had pain at 2 months was significantly delayed, and these subjects exhibited more rapidly recurring pain after their return.
Level of evidence: Level II; Retrospective Design; Prognosis Study
© 2017 Journal of Shoulder and Elbow Surgery Board of Trustees. All rights reserved.

Keywords: Shoulder; baseball; treatment; Little League shoulder; flexibility; athlete

Institutional review board approval was obtained before the start of this study (ethical committee at Izumi Orthopaedic Hospital, study No. IOH IRB-001), and informed consent was obtained from the parents of the subjects.

*Reprint requests: Mikio Harada, MD, PhD, Center for Hand, Elbow, and Sports Medicine, Izumi Orthopedic Hospital, 6-1 Maruyama Aza Kamiyagari Izumi-ku, Sendai, Miyagi 981-3121, Japan.
E-mail address: miharadaeye@yahoo.co.jp (M. Harada).

1058-2746/$ - see front matter © 2017 Journal of Shoulder and Elbow Surgery Board of Trustees. All rights reserved.
https://doi.org/10.1016/j.jse.2017.08.018

Little League shoulder (LLS) is an overuse condition that affects the proximal humeral physis of the throwing arm of skeletally immature, youth overhead athletes, such as baseball players. Recently, LLS has occurred with greater frequency in young overhead athletes.[21] Conservative treatment for LLS in young baseball players has been reported to yield good results[4,5,7,12,14,20,21,27-32]; the rate of complete return to baseball for baseball players with LLS ranges from 81%-100%,[1,12,16,18,19,22,23,25] and the mean period until complete return after initial presentation ranges from 6.2 weeks to 4.2 months.[18,19,21,22] Carson and Gasser[12] reported that all 23 patients with LLS were able to return to throwing after 3 months of rest and that 21 of 23 players (91%) had completely returned. Murakami et al[25] similarly reported that 13 of 18 players with LLS (72%) had completely returned within 6 months after initial presentation. The presence of Little League elbow is one of the factors reportedly associated with a delayed return to baseball,[18,19] but the factors associated with an incomplete return to baseball in young baseball players with LLS have not been investigated in detail.

The rate of recurrence of shoulder pain in baseball players with LLS has been reported to range from 0%-19%.[12,18,19,21,22,25] Heyworth et al[21] found recurrence of shoulder pain in 7% of 95 patients with LLS at a mean of 7.6 months after initial diagnosis. They also observed that LLS players with a glenohumeral internal rotation deficit, which indicates a 10° decrease in the range of motion (ROM) of internal rotation of the shoulder on the throwing side compared with the nonthrowing side, had an approximately 3-fold higher probability of recurrence of shoulder pain than players without a glenohumeral internal rotation deficit. In addition, Murakami et al[25] reported that the mean duration of throwing prohibition was 1.5 months for players with the recurrence of shoulder pain (n = 3) whereas the mean duration was 2.4 months for players without the recurrence of shoulder pain (n = 10). They speculated that a short duration of throwing prohibition may lead to the recurrence of shoulder pain. However, the factors associated with the recurrence of shoulder pain in young baseball players with LLS have not been investigated in detail.

It is speculated that the anatomic vulnerability of the proximal humeral growth plate and mechanical loading on the growth plate due to repetitive throwing are mechanisms of LLS occurrence.[3,6,8,11,13,15,33] Previous investigations have also reported that decreased ROM of internal rotation of the shoulder on the throwing side is related to pathologic conditions of the shoulder, including LLS.[24,26] In previous studies by Hashiguchi et al,[18,19] all 53 assessed players with LLS, who had decreased ROM of internal rotation of the shoulder and decreased scapular mobility on the throwing side, underwent conservative treatment involving throwing prohibition and rehabilitation. As a result of conservative treatment, all 53 players eventually showed improvements in their decreased ROM of internal rotation of the shoulder and decreased scapular mobility, and 46 of 53 players with LLS (87%) had completely returned at an average of 6.2 weeks after initial presentation.[18,19] The researchers speculated that decreased shoulder flexibility and scapular mobility may cause LLS. However, whether shoulder flexibility is associated with LLS has not been investigated in detail.

We hypothesized that the presence of shoulder pain immediately before subjects resume throwing after throwing prohibition would be associated with an incomplete return to baseball and pain recurrence, resulting in a worse outcome. We also hypothesized that poor shoulder flexibility would be associated with an incomplete return and pain recurrence. The aims of this study were to investigate the outcome of conservative treatment for LLS in young baseball players and to investigate the factors associated with an incomplete return and shoulder pain recurrence.

Methods

This work is a retrospective case-control study aiming to assess conservative treatment outcomes. From November 2010 to March 2014, 154 subjects were diagnosed with LLS. Among these 154 subjects, 67 were excluded from this study for the following reasons: the status of 29 subjects followed up within 1 month after initial presentation was unclear, 4 played sports other than baseball (tennis in 3 and basketball in 1), 14 had anteroposterior radiographs of the shoulder obtained on the throwing side alone, and it was unclear whether 20 had returned to baseball. Thus, 87 baseball players remained for the retrospective review. The subjects were all boys and ranged in age from 7.4-17.0 years (mean age, 12.1 years). Baseline demographic characteristics of the included players, including position, the reason for the onset of shoulder pain, the period from symptom onset to initial presentation, and complications, are listed in Table I.

The LLS diagnosis was based on anteroposterior radiographs of the shoulder. In all subjects, anteroposterior radiographs of both shoulders in external rotation were obtained, and widening of the proximal humeral physis on the throwing side relative to the nonthrowing side was observed. For the measurement of the widening, anteroposterior radiographs were enlarged using electronic software (Vox-Base; J-Mac System, Sapporo, Japan) to obtain accurate widening measurements with a resolution of 0.1 mm. The mean width of the proximal humeral physis was 3.4 mm (range, 0.6-7.2 mm) on the throwing side and 2.0 mm (range, 0-4.5 mm) on the nonthrowing side (Fig. 1).

To assess shoulder flexibility, we performed a physical examination of the shoulder, including the combined abduction test (CAT) and horizontal flexion test (HFT).[17] A physical examination was also performed to determine the presence of decreased ROM of internal rotation of the shoulder.[9,10] The results of this detailed assessment are shown in Figure 2. The CAT, HFT, and decreased ROM–of–internal rotation results were scored (negative, 1 point; positive, 0 points), and the shoulder flexibility score was defined as the total count of the aforementioned 3 items, yielding a score ranging from a minimum value of 0 points (ie, worst) to a maximum value of 3 points (ie, best). At initial presentation, the mean score was 0.25 points (range, 0-1 point) (n = 81) on the CAT, 0.21 points (range, 0-1 point) (n = 81) on the HFT, and 0.20 points (range, 0-1 point) (n = 79) for decreased ROM of internal rotation. The mean shoulder flexibility score was 0.66 points (range, 0-3 points) (n = 79).

The results of conservative treatment at initial presentation are presented in Table II. Of the subjects, 68 (78%) had been prohibited from throwing whereas the remaining 19 (22%) had continued throwing with limitations. Among the 68 subjects who had been prohibited from

Download English Version:

https://daneshyari.com/en/article/8801088

Download Persian Version:

https://daneshyari.com/article/8801088

Daneshyari.com