The shoulder problems and return to play in Japanese high school baseball players based on the baseball medical checkups

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INTRODUCTION: In Japan, the high school baseball off-season is from November to the following February (Fig. 1). We are conducting a medical checkup of high school baseball players in November in Kyoto, Japan. During the checkup, some players have difficulty in pitching due to shoulder pain. The Hyper External Rotation Test (HERT) is a useful tool for the diagnosis of intra-articular shoulder impingement syndrome (Fig. 2), which is a common shoulder problem in high school baseball players. The purpose of this study was to report on their shoulder problems and return to play based on the results of medical checkups.

METHODS: This study included 2288 players (15-17 years old and all males) who participated in medical checkups from 2011 to 2018 years. As the primary medical checkup, players were asked about shoulder pitching pain in the past and at the time of the checkup, and HERT was performed. Players who had shoulder pitching pain at the time of the checkup and who were HERT-positive were eligible for the secondary medical checkup. The rates of shoulder pitching pain in the past and at the time of the checkup were calculated and compared by position using the chi-square test. The rates of receiving the secondary checkup and returning to play were calculated. $P < 0.05$ were considered to be statistically significant.

RESULTS:

The shoulder pain rate in the past/at the time of the checkup was 50.6%/12.1% for pitchers, 51.2%/16.2% for catchers, 51.7%/17.3% for infielders, 49.9%/19.4% for outfielders, and 50.8%/12.4% overall. There were no significant differences in shoulder pain rates by position in the past and at the time of the checkup (Table 1). The HERT-positive rate was 11.7%, and the secondary checkup rate was 39.6%. Of the 106 players who underwent the secondary checkups, 100 players (94.3%) received conservative treatment and 6 players (5.7%) underwent surgical treatment. The surgical treatment was performed by arthroscopic debridement in all cases. The conservative and pre- and post-operative treatment included sports rehabilitation in all cases. The return-to-play rate by the spring (April)/summer (July) games was 93% (93 players)/100% (100 players) for the conservative treatment group and 83.3% (5 players)/100% (6 players) for the surgical treatment group.

DISCUSSION AND CONCLUSION: The shoulder pain rate at the time of the checkup was similar to that reported in the past in Japan. There were no significant differences in any pain rate by position, suggesting that shoulder pain may occur at any position similarly. It is important to continue to educate players, parents, and coaches on the need to prevent disorder from the start of baseball. All players were able to return to play before the most important summer games, and all surgical cases could be handled only with an arthroscopic soft tissue debridement. The medical checkups of high school baseball players during the off-season can lead to early diagnosis and treatment, which is useful for the players.

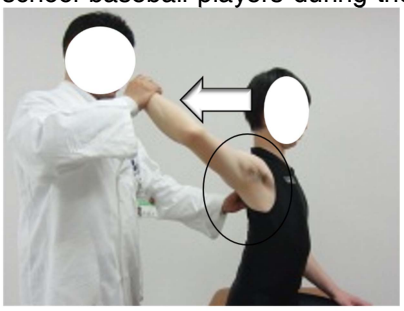

Fig 2. Hyper External Rotation Test

Fig 1. The medical checkup of Japanese high school baseball players in Kyoto, Japan.
(a) Medical examination by orthopaedic surgeons
(b) Ultrasonography of the elbow joint
(c) Explanation of secondary checkup

Table 1. The shoulder pitching pain rate

	The shoulder pain rate in the past	The shoulder pain rate at the time of the checkup	
Pitchers	50.6% (470/929 players)	12.1% (112/929 players)	n.s.
Catchers	51.2% (190/371 players)	16.2% (60/371 players)	
Infielders	51.7% (260/503 players)	17.3% (87/503 players)	
Outfielders	49.9% (242/485 players)	19.4% (94/485 players)	
All players	50.8% (1162/2288 players)	12.4% (283/2288 players)	

*Significant difference between groups ($P < .05$)
n.s.: not significant