Laboratories
Sports Medicine

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General Summary

Clinical Research
The ongoing research in our division concentrates on competitive athletes (including professional athletes), amateur athletes who include sports activities in their daily lives, and young athletes engaged in school sports clubs or dedicated to training within sports clubs.

Research Activities

Pain of the anterior superior iliac spine in the athletes in growth period
Physical, roentgenographical, and magnetic resonance findings, and duration of absence were evaluated in 10 patients in the growth period (average age: 14 years old) who had pain of anterior superior iliac spine. Symptoms were presented at the side of the pivot foot in 6 of 7 soccer players. The pain had a relatively chronic onset. Fat suppressed magnetic resonance imaging showed high signal intensity at the epiphysis, bone marrow, and sounding muscles. The average duration of absence was approximately 7 weeks.

Recovery process of neuromuscular coordination after a return to sports in patients who had undergone anterior cruciate ligament reconstruction: Comparison of 1 month after returning to sports and 20 months after surgery
The recovery process of neuromuscular coordination after the return to sports of 41 patients who had undergone anterior cruciate ligament reconstruction was evaluated with the switching silent period (SSP). One month after the return to sports, SSP was significantly longer in the operated side than in the nonoperated side. The SSP 20 months after surgery had significantly improved in the operated side and 1 month after the return to sports did not differ statistically between the nonoperated side and the operated side. Nerve-muscle coordination of the operated side was decreased 1 month after the return to sports but had significantly recovered 20 months after surgery.

Platelet-rich plasma therapy for sports-related tendon and ligament injuries
We have started a clinical trial of platelet-rich plasma therapy for sports-related tendon and ligament injuries. So far, we have performed this therapy for 8 patients. We have verified that this therapy is safe and effective for medial collateral ligament injury of the knee, tendinopathy of Achilles tendon, and lateral epicondylar of the elbow.

Evaluation of muscle training method for the rotator cuff: Comparison between closed kinetic chain and open kinetic chain
The effectiveness of muscle strength training between closed kinetic chain (CKC) and

open kinetic chain (OKC) cuff-exercises was compared in 42 patients with disabled throwing shoulder. We found that the impossibility rate was significantly lower with the CKC cuff exercise than with the OKC cuff exercise. In addition, the degree of increased muscle strengthening with the CKC cuff exercise was equal to or higher than that with OKC cuff exercise. The CKC cuff-exercise is suggested to be effective and can be performed even in the acute phase.

A case of a osteochondral lesion at the patellar side of the femur treated with open reduction and internal fixation

We reported a rare case of an osteochondral lesion at the patellar side of the femur in a 13-year-old boy. The lesion was treated with open reduction and internal fixation. Magnetic resonance images showed a 1.7×1.6-cm cartilage defect on the patellar side of the lateral condyle. A freely isolated fragment of the articular cartilage was reduced and fixed with 2 bioabsorbable pins. Second-look arthroscopy 5 months after initial surgery revealed the fragment was included in a stable union.

Simultaneous avulsion fracture at the tibial tubercle and the inferior pole of the patella occured in a growth period: A case report

We reported a simultaneous avulsion fracture at the tibial tubercle and inferior pole of the patella in a 13-year-old soccer player. Radiologic images showed patella alta and an avulsion fracture at inferior-medial pole of the patella. Magnetic resonance imaging showed the patella tendon attached to the bone fragment. Open reduction and internal fixation was performed with suture bridge technique, an bioabsorbable pin, and suture anchors. Five months after surgery, the patient returned to play at soccer practice. This type of fracture is so rare that only 5 cases have been reported.

Exercise-induced arrhythmia in a professional soccer player which had difficulty in diagnosis: A case report

We reported on a 27-year-old professional soccer player who had exercise-induced arrhythmia that was difficult to diagnosis at an early stage. At first, the symptoms were of low frequency and short duration. Although examinations at rest had normal finding, an electrocardiographic event recorder during exercise for several days first demonstrated abnormal findings. Exercise-induced arrhythmia was finally diagnosed with a high load during treadmill testing. One year 6 months after catheter ablation, the patients has returned to play with no recurrence.

Publications

Hayashi H, Kurosaka D, Saito M, Ikeda R, Kubota D, Kayama T, Hyakutake T, Marumo K. Positioning the femoral bone socket and the tibial bone tunnel using a rectangular retro-dilator in anterior cruciate ligament reconstruction. *PLoS One*. 2019 May 2; **14**(5): e0215778. doi: 10.1371/journal.pone.0215778. PMID: 31048889; PMCID: PMC6497238.