Original Article

Intra-Articular lesions in Anterior Cruciate ligament Deficient Knees Undergoing Arthroscopic Reconstruction Surgery

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Abstract:

Introduction: Anterior ligament cruciate ligament (ACL) injury of the knee is one of the most common injuries to the lower limbs in athletes. The purpose of this study is to investigate knee joint lesions and its related factors in patients with anterior cruciate ligament tear.

Methods: This cross-sectional descriptive study was performed on patients with anterior cruciate ligament rupture referring to Imam Sari Hospital from 21/3/2015 until 21/1/2018. Patients' information such as age, sex, history of injury, surgical history, history of cruciate ligament surgery, height and weight, body mass index(BMI), type of injury, type of exercise and type of cartilage lesions were entered into a study form.

Findings: Finally, 100 patients were enrolled in the study, 94% of them were male and the mean age of patients was 30 years. 42% of patients were 20-30 years of age and 25% were 30-40 years old. 72% had meniscal tear in which 64% of patients had rupture of the medial meniscus, and 25% of the lateral meniscus and 11% both menisci..18% of patients suffered from cartilage damage following ACL injury. 64% of injuries were due to sports specially football and 14% were during the work. In this study age and BMI were significantly correlated with the number of injuries.

Conclusion: The results of this study showed that the most common activity causing ACL tear is sport specially football and a significant number of injuries occur during work. Athletes have a high probability of recurrent knee injury. Meniscal injury is frequent and more common in chronic cases.surprisingly chondral damages were not common and all were mild.. Also, older age and greater body mass indexes are more associated with recurrent episodes a good predictor of the frequency of ACL injury.

Keywords: Knee, Anterior Cruciate Ligament, ACL, Arthroscopy.

Introduction:

The anterior cruciate ligament(ACL) is an extra synovial element and fibroblasts are involved in its continuous maintenance. This ligament is involved in preventing the tibia from moving forward on the femor and the knee hyperextension. Injury to the ACL is one of the most common injuries of the lower limbs in athletes. According to annual

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statistics, between 80,000 and 250,000 ACL injuries occur in the United States alone (1). This injury often occurs in young and active people in the community and its prevalence has been reported in female athletes in various studies 2 to 8 times that of male athletes (2). This ligament is damaged in both contact and non-contact forms, among which non-contact injuries account for about 70% of injuries (3).

ACL injury can have many side effects, short-term complications including pain, stiffness, joint swelling, and long-term complications such as joint instability, osteoarthritis, meniscus injuries, and functional disorders(4). It requires complex and lengthy treatment, keeps the injured athlete away from competitions and training grounds for several months which can have different psychological effects on them. Treatment of this lesion imposes a heavy cost on the individual and society. With these interpretations and with regard to its long-term and difficult treatment, the importance of prevention in the case of this lesion becomes more prominent. The first step in prevention is to identify the risk factors associated with it(5). Risk factors classify non-contact ACL injuries into four main categories: anatomical, hormonal, environmental, and biomechanical factors(6).

In this study, we examined the lesions inside the knee joint during surgery and examined the effect of patients demographics and time from injury on the frequency and severity of cartilage and menisci lesions in patients with anterior cruciate ligament rupture... It is hoped that by examining these factors, we will be able to prevent these factors from occurring and eliminate them, and prevent the progression of the disease.

Methods:

Institutional review board approval was:

obtained((IR.MAZUMS.IMAMHOSPITAL.REC.95.1998) The present study is a cross-sectional descriptive-analytical study performed on patients with anterior cruciate ligament rupture referred to Imam Sari Hospital from 21/3/2015 until 21/1/2018. Patients with multiple ligaments lesions were excluded. Patients admitted to the study were assessed by completing a questionnaire recording information such as age, sex, date of injury, date of surgery, history of cruciate ligament surgery, height and weight, BMI, type of injury, type of exercise, and type of cartilage lesions. The cartilage lesions were graded based on ICRS(7) (refrence?). After completing the data collection and coding of qualitative variables, all variables and responses entered SPSS software (V. 22.0, III Chicago Inc.) and using descriptive statistical tests, ratio test, Chi square, Fishers exact test and in case of distortion, probe regression was analyzed.

Findings:

Demographic information of individuals has been studied. The frequency of gender distribution is as follows: 94 (94%) of the participants in the study were male and 6 (6%) were female. The average age of the patients is 30 (+/-7.87) years with the range of 18-49 years.

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The average age of men and women was 30.09(+/-7.87) and 36.33(+/-5.46) years respectively. 42.6% of the men in this study were in the age range of 20 to 30 years and 26.6% of them were in the age range of 30 to 40 years. 66.7% of the women in this study are between 30 and 40 years old. 72 patients (72%) had meniscus tears and 28 patients did not .64% (64 patients) had medial meniscus rupture, 25% (25) had lateral meniscus rupture, and 11% (11) had both medial and lateral menisci rupture. There was a significant relationship between chronicity of ACL tear and frequency of meniscal tear, more chronic injury is associated with more meniscal tear.Eighty-seven percent of meniscal tears were managed by partial meniscectomy, 13 percent by repair.

18% of the patients in the study had cartilage damage.there was not significant relationship between chronicity of ACL tear and frequency of cartilage damage. ACL rupture is 64% of patients was due to exercise, 4% due to traffic accidents, 14% due to work and 18% by other factors. 48% of sport related ACL tear was in football. 74% of patients with cruciate ligament rupture were affected once or twice, 26% had more than twice accident. There is a statistically significant relationship between age classification and the number of injuries in patients..47.4% of patients aged 20 to 30 years have experienced one injury. Approximately 73% of patients over the age of 30 have been injured twice. Also, 66.7% of patients over the age of 40 have been injured three times.

Discussion:

The knee joint is the largest and probably the most complex joint in the body, and its role and importance in sports is significant. One of the important points of the knee joint is that the presence of any pain and discomfort, directly affects the efficiency and performance of the hip,ankle and foot joints. Therefore, due to the importance of the knee joint in terms of stability, strength and weight bearing ligament and meniscal injury accelerates degenerative or erosive changes in the joint surface(8). The results of the present study showed that most ruptures of the meniscus were medial(64%) , 25% were lateral and 11% both . Shelbourne et al. In their study stated that lateral meniscus rupture is delayed after medial meniscus rupture and therefore medial and lateral meniscus rupture should be more than only medial rupture opposite of the results of our study. The study of Tahmasebi et al.(9) and barrack has shown similar results to our study(9-11). onlyOnly 18% of patients had cartilage damage ,damage, which was less than study of Tahmasebi and Aglietti(12) , but in most studies similar to the present study, 20-30% were reported. In this study, most injuries occurred in 64% due to sports, 48% in football and 18% in work time. Tabatabai described 67% of traumas as sports, and most of them were related to football, and 20% included traffic injuries. Tahmasebi et al(9).(13) also stated in their study that the most common rupture mechanisms were sports traumas, especially football, in a place where non-professionals performed sports activities. Professional athletes usually warm up before exercising, and the muscles around their joints are stronger, and exercise techniques more correctly and under the supervision of a trainer. In this study, 83%

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of patients experienced a cruciate ligament rupture with more than one accident and not just one time.surprisigly in spite of recurrent accidents the frequency and severity of chondral damage was low. Patients who were injured for the first time in exercise or work experienced more meniscal tears with recurrent accidents.

The present study showed a significant relationship between the number of injuries and age, so that older people were more likely to experience multiple accidents., this may be at least partly due to the weakness of muscles in older people. Tandogan et al. Also reported similar results(13). Roos et al. In their study Found that older people were more likely to have an ACL rupture, followed by cartilage damage(14). In this study, the number of injuries was significantly higher in patients with higher body mass index than in patients with lower BMI. 94% of the patients were men and only 6% were women. 70% of male patients were in the age group of 20-40 years and most of them were 20-30 years old. Most female patients were in their 30s and 40s decadesCentury to the results of the present study, the ACL damage rate in Arendt et al.'s studies reported that the rate of damage in women was 2-8 times higher than in men(2, 15). Malinzak and McLean comparing between men and women have reported that women have larger valgus during landings and shear movements, and this factor is considered to be one of the most important causes of the higher prevalence of ACL injury in women(16, 17). The difference between the results of these studies and the present study is that most of the ACL tears in our study are due to sports such as football and due to the lack of participation of women in this type of exercise, gender distribution in our study can be justified. The results of Tahmasebi et al.'s study support this conclusion.(9).

Conclusion:

The most common cause of ACL rupture was sport especially football but a significant number also occurred at work and traffic accidents. The chronicity of injury was associated with more meniscal injury but chondral damage was surprisingly low. Medial meniscus was more frequently damaged than lateral. Greater BMI and older age was associated with more frequent injury and more meniscal tear.

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