

Available online at www.sciencedirect.com

ScienceDirect

www.elsevier.com/locate/jajs

Original Article

Clinical examination, magnetic resonance imaging and arthroscopic correlations of ligament and menisci injuries of knee joint

Ankit Syal ^{a,*}, Chirag H. Chudasama ^b^a Department of Orthopedics, B.J. Medical College and Civil Hospital, Asarwa, Ahmedabad 380016, India^b Arthroscopic Surgeon, Department of Orthopedics, B.J. Medical College and Civil Hospital, Asarwa, Ahmedabad 380016, India

ARTICLE INFO

Article history:

Received 4 November 2014

Accepted 3 December 2014

Available online 26 December 2014

Keywords:

Knee

Arthroscopy

Clinical examination

Magnetic Resonance Imaging

Correlation

ABSTRACT

Purpose: Our study has been carried out due to ambiguity in results of different scientific publications. Data obtained sheds light on importance of history taking and clinical examination and verifies the importance of MRI.

Methods: Ours is a prospective cross sectional double blinded study. We reviewed 190 patients who underwent knee arthroscopy for suspected menisci and ligament injuries. Patients were divided into 2 groups on objective clinical assessment: Those who were positive for either menisci or cruciate ligament injury [group 1] and those having both menisci and ligament injury [group 2]. MRI was performed using a 1.5 T machine using standard protocol at our centre and reported by an experienced radiologist. Findings of clinical examination, MRI and arthroscopy were analysed by a single independent reviewer and arthroscopy was considered as gold standard.

Results: In medial meniscus injuries we observed that there was statistically significant difference between clinical versus arthroscopy and MRI versus arthroscopy group in sensitivity (91.39% Vs 76.59%, $p < 0.0001$) and negative predictive value (89.19% Vs 76.08%, $p = 0.0003$). In lateral meniscus injuries we observed that on comparison between the two groups only positive predictive value had a significant difference (82.92% Vs 71.73%, $p = 0.0086$). In injuries of anterior cruciate ligament on comparison between the two groups there was statistically significant difference in specificity (88.88% Vs 79.07%, $p = 0.0085$) and negative predictive value (100% Vs 91.89%, $p < 0.00001$) whereas in posterior cruciate ligament injuries on comparison between the two groups there was statistically significant difference in sensitivity (100% Vs 90.9%, $p = 0.0001$) and positive predictive value (91.66% Vs 83.33%, $p = 0.01$).

Conclusion: The strength of correlation between MRI and arthroscopic findings confirms the value of MRI in assessing internal knee structures. Whereas MRI can be invaluable in diagnosis, a competent and preferably repeated clinical examination surpasses it.

Level of evidence: Level I diagnostic study.

Copyright © 2014, International Society for Knowledge for Surgeons on Arthroscopy and Arthroplasty. Published by Reed Elsevier India Pvt. Ltd. All rights reserved.

* Corresponding author. Plot No. 8, Vigyan Nagar Special, Kota 324005, Rajasthan. Tel.: +91 9909021560.

E-mail address: ankitsyal85@gmail.com (A. Syal).

<http://dx.doi.org/10.1016/j.jajs.2014.12.003>

1. Introduction

MRI has gained widespread acceptance in the evaluation of the ligaments and menisci injuries of the knee along with other pathologies, although one cannot rule out the importance of a thorough history and a good clinical examination. Many reports have stressed the importance of history taking and clinical examination and no statistical advantage of MRI in these cases.^{1,2} On the other hand, other studies^{3,4} emphasized the importance of MRI in increasing the accuracy of diagnosis. The aim of this study is to evaluate and compare the efficacy of clinical examination and radiological assessment using MRI with arthroscopic findings in ligament-menisci knee injuries. We hypothesized that MRI findings correlated with those of clinical examination and that of arthroscopy findings in case of tears of medial and lateral menisci and anterior and posterior cruciate ligament tears.

2. Materials and methods

Data from 260 consecutive knee arthroscopies performed by an experienced arthroscopy surgeon; between May 2011 and November 2013; for diagnostic arthroscopies, degenerative joint disorders, ligament injuries, loose body removals, and adhesiolysis were prospectively collected. From the above data, a subset of 190 patients who sequentially had clinical examination, MRI and arthroscopy for suspected meniscal and ligament injuries were considered for the present study and the data was reviewed. Patients with previous meniscectomies, knee ligament repairs or reconstructions and osteochondral fractures on imaging were excluded from the study.

Clinical data including patient demographics, wait period between MRI and arthroscopy, suggestive symptoms including effusion, presence of a “pop”, locking, mechanism of injury, clinical diagnosis, and operative details were documented and analysed. All patients were examined by one experienced arthroscopist. Findings of MRI were unknown to him.

Standard clinical tests were used for diagnosing pathologies. To diagnose menisci injuries joint line tenderness, McMurray's and Apley's tests were used, whereas for cruciate injuries, anterior and posterior drawer tests, Lachmann test, pivot and reverse pivot shift tests and posterior tibial sag were used.

MRI was requested for confirmation of clinical diagnosis and for obtaining additional information in those patients presenting to us for the first time and were allotted date of surgery with one to two weeks. In this study clinical and MRI findings were compared with arthroscopic findings considering later to be the gold standard. In this study all patients underwent MRI at the imaging centre in our institute. All magnetic resonance imaging studies were performed using a standard knee protocol on a 1.5-T MR scanner with a phased array knee coil. All of the patients had T1 and T2 weighted and proton dense sequence on coronal and sagittal plane images, without contrast. MR pulse sequences included fast spin echo (FSE) and fast recovery. All MRIs were reported by one senior radiologist at our institute. Radiologist, provided with only

patient identifying data, and provisional diagnosis reported the MRI findings. Meniscal tears were radiologically graded from I to III. Grade I had only punctuate non-contiguous hyper intensities, while grade II had linear streak hyper intensity, both not extending to the articular surface, whereas grade III were hyper intensities extending to the articular surface and were considered as positive findings. Complete as well as partial lesions of the anterior and posterior cruciate ligaments were interpreted as ruptures. Any osteochondral fracture leading to instability picked up from MRI and missed in normal skiagrams was omitted from the study group.

Arthroscopies were performed in a standard manner under spinal anaesthesia. MRI findings were not known to the surgeon. Operative findings were documented in the operation theatre, which included the anatomical structure involved with the presence or absence of tear, its location, status of the articular cartilage and additional details when available. Findings of clinical examination, MRI and arthroscopy were analysed by a single independent reviewer and arthroscopy was considered as gold standard.

The composite data was tabulated on Microsoft excel spreadsheet and studied for correlation. There were two identified groups: Those who were clinically positive for either menisci or ligament injury [group A] and combined menisci and ligament injury [group B]. Sensitivity, specificity, positive predictive value and negative predictive value of clinical and MRI diagnosis for anterior cruciate ligament, posterior cruciate ligament, medial meniscus and lateral meniscus were calculated from the data procured using standard formulae. Full agreement was when the modalities correlated accurately. Any disparity between clinical examination and MRI at arthroscopy was considered no agreement. Partial agreement was when there was partial correlation between the modalities.

3. Results

The observations of the study group were prepared group wise for correlation. In group A the total population was 73 patients including 60 males and 13 females. Mean age of the group was 32 (Range; 9–58 years). Knees involved were 40 on the right side and 33 on the left side. Duration between injury and arthroscopy averaged to be 9.44 months (Range; 0.5–72 months). Duration between MRI and arthroscopy averaged to be 1.9 months (Range; 0.25–11). Mode of trauma was fall (including sports injuries) in 44 patients and two wheeler accidents in 29 patients.

On comparing the findings between clinical examination and arthroscopy medial menisci lesions showed full agreement in 19 patients (86.36%) and no agreement in 3 patients (13.63%). In case of all 6 patients with lateral meniscus lesions there was full agreement. 35 patients (87.5%) with anterior cruciate ligament (ACL) injury had full agreement and 5 (12.5%) had partial agreement denoting dilemma over complete versus partial tear. It has come to our notice that these patients had anterior cruciate stumps fibrosis attachment with posterior cruciate ligament giving pseudo firm end point on anterior drawer and lachmann tests, in only 1 patient diagnosed to have complete tear on clinical examination was there partial tear on arthroscopy in that only around 10% of

Download English Version:

<https://daneshyari.com/en/article/3245120>

Download Persian Version:

<https://daneshyari.com/article/3245120>

[Daneshyari.com](https://daneshyari.com)