



Sudan University of Science and Technology
College Of Graduate Studies

**Characterization of Knee Joint Diseases Using
MRI**

توصيف امراض مفصل الركبه باستخدام الرنين المغنطيسي

A thesis submitted for partial fulfillment of the award of M.Sc
degree in diagnostic radiological technology

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:قال تعالى

(قُلْ سِيرُوا فِي الْأَرْضِ فَانظُرُوا كَيْفَ بَدَأَ الْخَلْقَ

ثُمَّ اللَّهُ يُنْشِئُ النَّشْأَةَ الْآخِرَةَ إِنَّ اللَّهَ عَلَى كُلِّ

شَيْءٍ قَدِيرٌ

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I would like to express my great thanks and tribute to everyone who support me in work; especially who helped me in all hospital.

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Dedication

To whom I love

To whom I care about

List of abbreviations:

ACL Anterior Circuate Ligament

BMI Body Mass Index

CL Cruicate Ligament

CT Computed Tomography

IT Iliotibial Band

LCL Lateral Collateral Ligament

LM Lateral Meniscus

LR Lateral Retinaculum

MCL	Medical Collateral Ligament
MM	Medial Meniscus
MR	Medial Retinaculum
MRI	Magnetic Resonance Imaging
MRI	Magnetic Resonance Imaging
PCL	Posterior Cruicate Ligament
S.D	Standard Deviation
T	Tesla
US	Ultrasound

Abstract

The knee joint is the largest joint in the human body and is very complicated structure.

The objectives of this study were evaluate the knee joint disease using MRI and frequencies of knee joint disease and used to demonstrate the proper joint space, as well as to correlate the measurements with patient's age and BMI.

The study included 50 patients examine for knee joint MRI .All patients were diagnosed abnormal and patients with arthritis fracture...etc. Excluded, this cases where obtained at Alrebat hospital .In the period from September to February.

The study used MRI machine semencie 1.5T.

Techniques was applied for knee joint exam, distance from medial femoral condyle to medial tibia condyle, the distant from lateral femoral condyle to lateral tibia condyle, and central distance at the middle of the joint laterally to the inter condylar tibia eminence distance between medial femoral condyle to medial tibia condyle, from lateral femoral condyle to the lateral tibia condyle were measured in (mm) used computer soft ware .Regarding the results, it showed that there are significant effect in Cartilage Loss or Alteration in Meniscus has change in articular cartilage score contributed substantially to narrowing of the joint space. There are relation between patient's age and BMI and the knee joint space and No significcant different between male and female.The measurements of the joint space decreased by increasing patient's age and BMI.

ملخص الدراسة

. مفصل الركبه هو اكبر مفصل في جسم الانسان وله تركيب معقد

اجريت هذه الدراسة لتقييم الوضع الامامي الخلفي لمفصل الركبه باستخدام جهاز الرنين المغنطيسي لتحديد امراض مفصل الركبه وقياس مساحه مفصل الركبه واجراء مقارنه للقياسات مع كل من وزن وعمر المريض . طبقت الدراسة علي خمسون مريضاً, وتضمنت الدراسة المرضى الذين يعانون من التهاب المفاصل , الكسور و.... الخ

تم جمع البيانات من مستشفى الشرطه . في الفترة من شهر سبتمبر الي شهر فبراير 2016 . ثم تم جمع البيانات بواسطة قراء وتم القياس باستخدام الحاسوب , اخذ الوسط الحسابي والانحراف المعياري و وجد معامل الارتباط لتحديد دقة القياس

و لقد اوضحت نتائج القياس العمودي للمسافة من اللقمة الانسيه لعظم الفخذ الي اللقمة الانسيه لعظم الظنوب من الجزء الداخلي والخارجي و المسافه بين الحدة الوحشية بين اللقمتين و الحدة الانسيه بين اللقمتين الي قمة الرضفه باستخدام تقنية التصوير المغنطيسي

ووجد ان هنالك تأثير في مساحه مفصل الركبه وضيقة مع الزمن وان خشونة المفاصل هي من اهم المسببات لضيق مساحة المفصل

ولخصت الدراسة بان هنالك علاقة عكسية بين مساحة مفصل الركبه وكل من عمر و حجم المريض

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