

DIREKTNA MAGNETNORESONANČNA ARTROGRAFIJA KOLKA S TRAKCIJO – PREDSTAVITEV PRIMEROV

DIRECT MR ARTHROGRAPHY OF THE HIP WITH LEG TRACTION – CASE STUDIES

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IZVLEČEK

Uvod in namen: Magnetnoresonančna artrografija kolka je minimalno invazivna in najboljčutljivejša diagnostična metoda za oceno acetabularnega labruma in sklepnega hrustanca kolka.

Namen prispevka je predstaviti protokol MR artrografije kolka s trakcijo, kot jo izvajamo v naši ustanovi, ter prikazati glavne značilnosti v primerjavi s klasično MR artrografijo kolka brez trakcije.

Metode: Izbrali smo nekaj primerov preiskovancev, pri katerih smo opravili MR artrografijo kolka s trakcijo in brez nje, ter retrospektivno primerjali prikaz znotrajsklepnih anatomskih struktur. Prikaz znotrajsklepnih struktur je ocenjeval zdravnik radiolog.

Pred začetkom MR preiskave se pacientu punktira kolčni sklep in vbrizga kontrastno sredstvo. Na ta način se na MR slikah poveča kontrast med sklepno tekočino in znotrajsklepnimi strukturami. Ob tem kontrastno sredstvo razpne sklepno ovojnico in razmakne znotrajsklepne strukture, ki sicer ležijo v tesnem stiku med seboj, in jih je zato pri slikanju brez kontrastnega sredstva težje ocenjevati. Kontrastno sredstvo izpolni tudi defekte sklepnega hrustanca in labruma, kar omogoča detekcijo že zelo majhnih poškodb. Za izboljšan prikaz in oceno labruma ter sklepnega hrustanca se lahko po aplikaciji kontrastnega sredstva v sklep izvede tudi aksialna

trakcija noge, ki jo izvedemo pred začetkom preiskave, ko pacient leži na mizi magnetnoresonančnega tomografa. Na ta način se razpre sklepna špranja kolčnega sklepa, da lahko kontrast oblije sklepni hrustanec v celotnem delu. Vse preiskave smo opravili z MR tomografom Siemens Magnetom Vida 3T. Za izvedbo trakcije smo uporabili namenski pripomoček, ki smo ga izdelali v naši ustanovi.

Rezultati in razprava: Ugotavljamo, da pri MR artrografiji s pomočjo trakcije dosežemo boljši prikaz znotrajsklepnih struktur, zlasti hrustančnih površin. Zato je preiskava bolj občutljiva za oceno poškodb, predvsem delaminacije hrustanca, v primerjavi s klasično MR artrografijo kolka, kar je v skladu s študijami iz literature.

Zaključek: MR artrografija s trakcijo je najnatančnejša diagnostična preiskava za oceno znotrajsklepnih struktur. Pri tem je ključnega pomena pravilna izvedba preiskave (pravilna namestitvev pacienta, izvedba trakcije z ustrezno silo ter ustrezno planiranje pulznih zaporedij glede na želeni prikaz anatomskih struktur), pri kateri ima radiološki inženir zelo pomembno vlogo. Le na ta način se lahko zagotovi visoko diagnostično vrednost pridobljenih MR slik.

Ključne besede: direktna magnetnoresonančna artrografija, MR artrografija, MR artrografija kolka, trakcija

ABSTRACT

Introduction and Purpose: Magnetic Resonance (MR) arthrography of the hip represents a minimally invasive and highly sensitive diagnostic modality for the assessment of the acetabular labrum and hip articular cartilage. The purpose of this contribution is to present the protocol for hip MR arthrography with traction, as conducted in our institution, and to elucidate its key characteristics in comparison to conventional MR arthrography of the hip without traction.

Methods: A selection of patients underwent MR arthrography of the hip with and without traction, and a retrospective comparison was conducted to evaluate the depiction of intra-articular anatomical structures. The assessment of intra-articular structures was performed by a radiologist. Prior to the initiation of the MR examination, the hip joint was punctured, and a contrast agent was injected. This method enhances the contrast between the synovial fluid and intra-articular structures on MR images. The contrast agent distends the joint capsule and separates intra-articular structures, which are otherwise closely apposed, making their assessment challenging without contrast enhancement. Additionally, it fills defects in the articular cartilage and labrum, facilitating the detection of even minute injuries. For improved visualization and assessment of the labrum and articular cartilage, axial traction of the leg was applied after the administration of the contrast agent, performed before the examination while the patient lies on the magnetic resonance imaging (MRI) table. This manoeuvre opens the joint space of the hip, allowing the contrast agent to cover the entire joint cartilage. All examinations were conducted using a Siemens Magnetom Vida 3T MRI scanner. A dedicated device, fabricated at our institution, was utilized for traction during the procedure.

Results and Discussion: Our findings indicate that MR arthrography with traction achieves the superior visualization of intraarticular structures, particularly articular surfaces. Consequently, this imaging modality exhibits greater sensitivity for the assessment of injuries, particularly cartilage delamination, compared to conventional hip MR arthrography, aligning with existing literature studies.

Conclusion: MR arthrography with traction emerges as the most precise diagnostic examination for evaluating intra-articular structures. The proper execution of the procedure, including correct patient positioning, the application of traction with appropriate force, and the meticulous planning of pulse sequences for the desired depiction of anatomical structures, is of the utmost importance. In this regard, the radiographer plays a crucial role. Only through such meticulous execution can a high diagnostic value be assured for obtained MR images.

Keywords: Direct magnetic resonance arthrography, MR arthrography, hip MR arthrography, traction

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