

Abstract 11361: Magnetic Resonance Imaging in Symptomatic Children with Hereditary Multiple Exostoses of the Hip

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Background: Magnetic Resonance Imaging (MRI) has been reported as an excellent modality for the evaluation of non-traumatic hip pain. Hip involvement is very common in patients with Hereditary multiple osteochondromas (HME). MRI helps define the pathoanatomy and is useful for delineation of the cause of hip pain in these patients. It provides information about possible associated injuries like labral and chondral tears or ischiofemoral impingement (IFI). However, to our knowledge, there has been no report about MRI findings in symptomatic children with HME of the hip.

Questions/Purposes: The aim of this study is to describe the findings of MR Imaging/Arthrography (MRI/MRA) for symptomatic children with HME and hip osteochondromas. The role of this imaging modality surgical decision making as well as correlation of MR and intraoperative findings is assessed as well.

Methods: Records of all children with HME and hip osteochondromas, who had hip MRI/MRA, were retrospectively reviewed. The presence of chondral lesions and labral tears, as well as IFI, was recorded. IFI was defined as edema or fatty replacement/atrophy in the quadratus femoris muscle (QFM) or decrease of the space for this muscle between the ischium and the proximal femur. The measurements used to determine the space included the ischiofemoral space (IFS), the quadratus femoris space (QFS) and the minimum ischiofemoral space (MIFS). All measurements were performed on axial T1-weighted images.

Results: Ten children were included in the study (4 males and 6 females). In 2 patients, MRI was unilateral, therefore a total of 18 hips were analyzed. In all cases, the indication for MRI was hip pain. Mean age, when MRI was performed, was 11.7 years (SD 3.90). Labral tears were found in 44% (8/18) and chondral lesions in 33% (6/18) of the hips. Mean IFS was 17.2 mm (SD 7.3); mean QFS was 14.9 mm (SD 5.3) and mean MIFS was of 12.8 mm (SD 5.9). IFI was seen in 44% (8 of 18) of hips. Two patients had bilateral IFI. MIFS was less than 10 mm in all hips with IFI (8/8). Out of these hips, 88% (7/8) had edema of the QFM and 38 % (3/8) had fatty replacement or atrophy in the muscle. Osteochondromas were seen in the lesser trochanter in all hips with IFI (8/8) and in the ischium in 50% of them (4/8) (Please see attached table).

Conclusion: In symptomatic children with HME of the hip, MRI is helpful in detecting the source of pain. A high percentage of these children have ischiofemoral impingement and intraarticular lesions. These findings can play an important role in the indication and planning of the surgical approach.

Table: Hips with ischiofemoral impingement (IFI) (8 hips).

| Gender | Age (years) | Side | MIFS (mm) | IFS (mm) | QFS (mm) | Edema QFM | Fatty replacement of QFM or atrophy | OS in lesser trochanter | OS in ischial tuberosity |
|--------|-------------|-------|-----------|----------|----------|-----------|-------------------------------------|-------------------------|--------------------------|
| Male | 13.9 | Left | 9 | 11.5 | 14.3 | Yes | No | Yes | No |
| Female | 6 | Right | 8.7 | 9.6 | 11.6 | Yes | No | Yes | Yes |
| Female | 7.8 | Right | 7.6 | 13.9 | 11.3 | Yes | Yes | Yes | No |
| | | Left | 6.4 | 7.1 | 10.4 | Yes | Yes | Yes | Yes |
| Female | 13 | Left | 9.9 | 23.9 | 14.2 | Yes | Yes | Yes | No |
| Female | 12.8 | Right | 7.4 | 14.5 | 9.3 | Yes | No | Yes | Yes |
| | | Left | 9.9 | 13.5 | 10.5 | Yes | No | Yes | No |
| Female | 11.6 | Right | 8.9 | 10.4 | 11.7 | No | No | Yes | Yes |

MIFS: minimum ischiofemoral space; IFS: Ischiofemoral space; QFS: Quadratus femoris space; QFM: Quadratus femoris muscle. OS: Osteochondromas