**Appendix MR**

**Background**

Standard MRE (Appendix 1) was performed between January 14, 2011, and March 26, 2015. The findings were recorded on standardized sheets (Appendix 2). A pilot study of the reading procedure was initially performed with 10 patients who were not included in the present study.

**Interpretation of findings**

Subchondral bone marrow edema or bone marrow contrast enhancement seen on at least two consecutive slices of an MRI scan was considered active sacroiliitis. Structural changes like subchondral fatty depositions, sclerosis, erosions or bony bridging was considered as spondyloarthropathy-related chronic sacroiliitis. The findings were graded unilateral, bilateral, doubtful or normal.

**MRI protocol**

**Technical parameters utilized for MRE sequences acquisition – Philips**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sequence** | **b-FFE** | **SS T2W TSE** | **SS T2W TSE FS** | **3D THRIVE FS**  **pre-, early- and late- post iv contrast** |
| **Orientation** | Axial/Coronal | Coronal | Axial | Coronal/axial recontruction |
| **Slice thickness (mm)** | 4 | 4 | 4 | Voxel size:  2.07 x 2.1 x 2 |
| **Field of view** | 300/420 x 400 | 375x311 | 400x300 | 405x405 |
| **Matrix** | 400x300/268x470 | 252x204 | 364x234 | 196x193 |
| **TR (ms)** | 6 | 1045 | 490 | 4.3 |
| **TE (ms)** | 3 | 80 | 80 | 1.96 |
| **Flip angle** | 70 | 90 | 90 | 10 |
| **Breath hold** | Yes | Yes | Yes | Yes |

**Abbreviations:**

b-FFE – Balanced Fast Field Echo

SS – Single Short

T2W – T2 weighted

TSE – Turbo Spin Echo

FS – Fat suppressed

THRIVE - T1-weighted High Resolution Isotropic Volume Examination

Iv – intravenous

**Preparation:**

Patients fasted 4 hours prior to the study. They consumed 1 L of 3 % Sorbitol solution 1 hour before the exam. The examination was performed in prone position. Patients received intravenous injections of 20 mg of scopolamine-*N*-butyl bromide (Buscopan; Boehringer Ingelheim, Germany) to reduce motion artifacts from bowel peristalsis. Intravenous injection of 0.2 ml/kg body weight of Gadolinium contrast medium (Dotarem, Guerbet, France) was given and patients were scanned 1 and 5 minutes after the injection.

The exclusion criteria included pregnancy, presence of foreign bodies that were incompatible with a magnetic field and severe claustrophobia.

**Standardized data sheets for MRE assessment of sacroiliac joints.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Findings/MRI sequences** | | **Active sacroiliitis** | | | |
| **T2 fat-sat\*** | | **Contrast-enhanced T1** | |
| **Unilateral** | **Bilateral** | **Unilateral** | **Bilateral** |
| **Main findings** | **Bone marrow edema** |  |  |  |  |
| **Osteitis** |  |  |  |  |
| **Additional findings** | **Synovitis** |  |  |  |  |
| **Enthesitis** |  |  |  |  |

\*T2 fat -sat: fat saturated T2-weighted sequence sensitive for free water.

|  |  |
| --- | --- |
| **Chronic sacroiliitis** | |
| **Structural changes:** |  |
| **Subchondral sclerosis** |  |
| **Erosions** |  |
| **Subchondral fatty depositions** |  |
| **Ankylosis** |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Conclusion** | | | | | | |
| **Sacroiliitis** | | | **Doubtful sacroiliitis** | | | **No sacroiliitis** |
| **Active** | | **Chronic** | **Active** | | **Chronic** |  |
| **Unilateral** | **Bilateral** |  | **Unilateral** | **Bilateral** |  |
|  |  |  |  |