

**Chronic Back Pain Suspected Sacroiliitis Spondyloarthropathy
EVIDENCE TABLE**

Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
1. Underwood MR, Dawes P. Inflammatory back pain in primary care. <i>Br J Rheumatol</i> . 1995;34(11):1074-1077.	Review/Other-Dx	313 patients	To review IBP in primary care in patients.	313 back pain sufferers completed a screening questionnaire for IBP. This was positive in 46 (15%), who were invited for a further examination. Only 2 of these patients had definite AS. 18 of them (39%) had other features associated with spondyloarthropathy. It is suggested that up to 5% of back pain sufferers may have a mild form of AS that may never progress to definite ankylosis, but for whom treatment as if they had AS may be of benefit.	4
2. Sieper J, van der Heijde D, Landewe R, et al. New criteria for inflammatory back pain in patients with chronic back pain: a real patient exercise by experts from the Assessment of SpondyloArthritis international Society (ASAS). <i>Ann Rheum Dis</i> . 2009;68(6):784-788.	Observational-Dx	20 patients	To discuss a new approach for the development of IBP classification criteria.	5 parameters best explained IBP according to the experts. These were: (1) improvement with exercise (OR 23.1); (2) pain at night (OR 20.4); (3) insidious onset (OR 12.7); (4) age at onset <40 years (OR 9.9); and (5) no improvement with rest (OR 7.7). If at least 4 out of these 5 parameters were fulfilled, the criteria had a sensitivity of 77.0% and specificity of 91.7% in the patients participating in the workshop, and 79.6% and 72.4%, respectively, in the validation cohort.	2
3. van der Linden S, Valkenburg HA, Cats A. Evaluation of diagnostic criteria for ankylosing spondylitis. A proposal for modification of the New York criteria. <i>Arthritis Rheum</i> . 1984;27(4):361-368.	Review/Other-Dx	N/A	To evaluate the New York and the Rome diagnostic criteria for AS and the clinical history screening test for AS.	The New York criterion of pain in the (dorso) lumbar spine lacks specificity, and the chest expansion criterion is too insensitive. The Rome criterion of low back pain for more than 3 months is very useful. Our study showed the clinical history screening test for AS to be moderately sensitive, but it might be better in clinical practice. As a modification of the New York criteria, substitution of the Rome pain criterion for the New York pain criterion is proposed.	4

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4. Rudwaleit M, Landewe R, van der Heijde D, et al. The development of Assessment of SpondyloArthritis international Society classification criteria for axial spondyloarthritis (part I): classification of paper patients by expert opinion including uncertainty appraisal. <i>Ann Rheum Dis.</i> 2009;68(6):770-776.	Observational-Dx	71 patients	To develop candidate classification criteria for axial SpA that includes patients with but also without radiographic sacroiliitis.	Active sacroiliitis on MRI (OR 45, 95% CI, 5.3 to 383; $P < 0.001$) was strongly associated with the classification of axial SpA. The knowledge of MRI findings led to a change in the classification of 21.1% of patients. According to the first set of candidate criteria (sensitivity 97.1%; specificity 94.7%) a patient with chronic back pain is classified as axial SpA in the presence of sacroiliitis by MRI or x-rays in conjunction with 1 SpA feature or, if sacroiliitis is absent, in the presence of at least 3 SpA features. In a second set of candidate criteria, IBP is obligatory in the clinical arm (sensitivity 86.1%; specificity 94.7%).	3
5. Rudwaleit M, Jurik AG, Hermann KG, et al. Defining active sacroiliitis on magnetic resonance imaging (MRI) for classification of axial spondyloarthritis: a consensual approach by the ASAS/OMERACT MRI group. <i>Ann Rheum Dis.</i> 2009;68(10):1520-1527.	Review/Other-Dx	10 doctors	To identify and describe MRI findings in sacroiliitis and to reach consensus on which MRI findings are essential for the definition of sacroiliitis.	Active inflammatory lesions such as BMO/osteitis, synovitis, enthesitis and capsulitis associated with SpA can be detected by MRI. Among these, the clear presence of BMO/osteitis was considered essential for defining active sacroiliitis. Structural damage lesions such as sclerosis, erosions, fat deposition and ankylosis can also be detected by MRI. At present, however, the exact place of structural damage lesions for diagnosis and classification is less clear, particularly if these findings are minor. The ASAS group formally approved these proposals by voting at the annual assembly.	4

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6. Rudwaleit M, van der Heijde D, Landewe R, et al. The development of Assessment of SpondyloArthritis international Society classification criteria for axial spondyloarthritis (part II): validation and final selection. <i>Ann Rheum Dis.</i> 2009;68(6):777-783.	Observational-Dx	649 patients from 25 centers	To validate and refine 2 sets of candidate criteria for the classification/diagnosis of SpA.	Upon diagnostic workup, axial SpA was diagnosed in 60.2% of the cohort. Of these, 70% did not fulfil modified New York criteria and, therefore, were classified as having “nonradiographic” axial SpA. Refinement of the candidate criteria resulted in new ASAS classification criteria that are defined as: the presence of sacroiliitis by radiography or by MRI plus at least 1 SpA feature (“imaging arm”) or the presence of HLA-B27 plus at least 2 SpA features (“clinical arm”). The sensitivity and specificity of the entire set of the new criteria were 82.9% and 84.4%, and for the imaging arm alone 66.2% and 97.3%, respectively. The specificity of the new criteria was much better than that of the European Spondylarthropathy Study Group criteria modified for MRI (sensitivity 85.1%, specificity 65.1%) and slightly better than that of the modified Amor criteria (sensitivity 82.9%, specificity 77.5%).	3
7. Haibel H, Rudwaleit M, Listing J, et al. Efficacy of adalimumab in the treatment of axial spondylarthritis without radiographically defined sacroiliitis: results of a twelve-week randomized, double-blind, placebo-controlled trial followed by an open-label extension up to week fifty-two. <i>Arthritis Rheum.</i> 2008;58(7):1981-1991.	Experimental-Tx	46 patients	To evaluate the efficacy and safety of the TNF antagonist adalimumab in patients with SpA without radiographically defined sacroiliitis refractory to conventional treatment.	All 46 patients (22 receiving adalimumab and 24 receiving placebo) completed the 12-week trial; 38 patients completed the extension period to week 52. At week 12, an ASAS40 response was achieved by 54.5% of the adalimumab-treated patients, as compared with 12.5% of the placebo-treated patients ($P=0.004$). After switching to adalimumab, a similar degree of efficacy was also achieved by the patients who were initially treated with placebo. Efficacy was maintained in all patients until week 52. Young age at study entry and an elevated C-reactive protein concentration were the best predictors of achieving an ASAS40 response. Serious adverse events occurred in 5 patients, none of which was related to the study drug.	1

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8. Sieper J, Rudwaleit M, Baraliakos X, et al. The Assessment of SpondyloArthritis international Society (ASAS) handbook: a guide to assess spondyloarthritis. <i>Ann Rheum Dis</i> . 2009;68 Suppl 2:ii1-44.	Review/Other-Dx	N/A	To provide a comprehensive handbook on the most relevant aspects for the assessments of spondyloarthritis, covering classification criteria, MRI and x-rays for SIJs and the spine, a complete set of all measurements relevant for clinical trials and international recommendations for the management of SpA.	N/A	4
9. Mau W, Zeidler H, Mau R, Majewski A, Freyschmidt J, Deicher H. Outcome of possible ankylosing spondylitis in a 10 years' follow-up study. <i>Clin Rheumatol</i> . 1987;6 Suppl 2:60-66.	Review/Other-Dx	88 patients	To assess the outcome of possible AS in a 10 years' follow-up study.	32 (59%) developed definite AS according to the New York criteria, 10 (19%) had possible/undifferentiated seronegative spondyloarthropathy and 12 patients had other diagnoses. Only 3 (9%) of 35 patients with sacroiliitis did not fulfill the New York criteria for definite AS until the last examination. Sacroiliitis and radiological spinal signs of AS appeared rather late above a mean age of 40 years and after a mean disease duration of more than 10 years. After 18 years mean disease duration 25 (78%) of 32 AS patients had good or sufficient functional capacity indicating an overall good functional prognosis. HLA B27 typing proved to be useful in patients with possible early AS: 29 (71%) of 41 B27 positive and 3 (23%) of 13 B27 negative patients developed definite AS ($P<0.005$). A combination of the B27 test with data of the history, clinical, laboratory, and radiological examination proposed as early diagnostic criteria detected patients with the outcome diagnosis of definite AS with even higher significance ($P<0.001$).	4

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10. Aydin SZ, Maksymowych WP, Bennett AN, McGonagle D, Emery P, Marzo-Ortega H. Validation of the ASAS criteria and definition of a positive MRI of the sacroiliac joint in an inception cohort of axial spondyloarthritis followed up for 8 years. <i>Ann Rheum Dis.</i> 2012;71(1):56-60.	Observational-Dx	29 patients	To test the diagnostic and predictive value of the ASAS criteria and definition of a 'positive' MRI.	All patients were classified as having axial SpA, with more patients fulfilling the imaging arm (83%, n=24/29) than the human leucocyte antigen B27 arm (62%, n=18/29). Concordant reader data showed that the baseline MRI had high diagnostic utility for SpA according to global assessment (sensitivity/specificity: 66%/94%, LR+ 11.8, LR- 0.4) and ASAS definition (sensitivity/specificity: 79%/89%, LR+ 7.1, LR- 0.2). Likewise, a positive baseline MRI had 100% sensitivity for subsequent radiographic sacroiliitis by either assessment, although specificity was lower (56% for global assessment and 33% for ASAS definition).	3
11. Althoff CE, Sieper J, Song IH, et al. Active inflammation and structural change in early active axial spondyloarthritis as detected by whole-body MRI. <i>Ann Rheum Dis.</i> 2013;72(6):967-973.	Observational-Dx	75 patients	To evaluate active inflammatory lesions and structural changes in patients with active nonradiographic SpA compared with patients with AS on whole-body MRI.	92% of patients with AS showed active inflammation in the SIJ, 53% in the spine and 94% and 39%, respectively, in the nonradiographic SpA group. There was a nonsignificant trend towards more inflammation in patients with AS compared with patients with nonradiographic SpA in SIJs and spine. Peripheral enthesitis/osteitis was more common in patients with AS (n=22) than in those with nonradiographic SpA (n=12) ($P=0.05$). Structural changes were more common in patients with AS than in those with nonradiographic SpA, with significantly higher scores for SIJ fatty bone marrow deposition in patients with AS (4.8+/-3.2) compared with those with nonradiographic SpA (2.4+/-2.7; $P=0.001$) and more frequent bone proliferation in the spine and the SIJ ($P=0.02$ and $P=0.005$, respectively). SIJ erosions were more common in AS (score 4.2+/-2.3) than in nonradiographic SpA (score 3.8+/-1.8) patients (not significant).	4

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12. Bennett AN, McGonagle D, O'Connor P, et al. Severity of baseline magnetic resonance imaging-evident sacroiliitis and HLA-B27 status in early inflammatory back pain predict radiographically evident ankylosing spondylitis at eight years. <i>Arthritis Rheum.</i> 2008;58(11):3413-3418.	Observational-Dx	40 patients	To investigate what proportion of patients with MRI-evident sacroiliitis develop AS in the long term and whether there are predictors of outcome.	50 patients were assessed at the beginning of the study, and 40 patients were followed up after a mean of 7.7 years. Of these 40 patients, 58% were HLA-B27 positive, and 98% met the European Spondylarthropathy Study Group criteria. At baseline, 33 (83%) of the 40 patients followed up had MRI-evident sacroiliitis, and 6 (12%) had unequivocal AS according to the modified New York criteria. At follow-up, despite significant improvements in clinical outcomes, 13/39 patients (33.3%) had AS according to the modified New York criteria. The combination of severe sacroiliitis seen on MRI with HLA-B27 positivity was an excellent predictor of future AS (LR 8.0, specificity 92%), while mild or no sacroiliitis, regardless of HLA-B27 status, was a predictor of not having AS (LR 0.4, specificity 38%).	2
13. Rudwaleit M, Schwarzlose S, Hilgert ES, Listing J, Braun J, Sieper J. MRI in predicting a major clinical response to anti-tumour necrosis factor treatment in ankylosing spondylitis. <i>Ann Rheum Dis.</i> 2008;67(9):1276-1281.	Observational-Dx	62 patients	To evaluate the role of MRI in predicting a Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) improvement of at least 50% (BASDAI 50) upon anti-TNF therapy of active AS.	The Berlin MRI spine score (OR 1.16, 95% CI, 1.02 to 1.33) and disease duration (OR 0.9, 95% CI, 0.63 to 0.97) were statistically significant predictors of a BASDAI 50 response using regression analysis while there was only a trend for C-reactive protein. The LR for achievement of BASDAI 50 was increased in patients with a Berlin MRI spine score ≥ 11 (LR 6.7), disease duration < 10 years (LR 4.2) and C-reactive protein ≥ 40 mg/L (LR 3.4). All patients with 2 or 3 of these predictors improved clinically (as assessed by BASDAI) by at least 45%. Disease duration > 20 years, normal C-reactive protein and no active inflammatory lesion in the spine were highly predictive of not achieving BASDAI 50. A trend was only found for the MRI score of SIJ to be predictive.	3

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14. Devauchelle-Pensec V, D'Agostino MA, Marion J, et al. Computed tomography scanning facilitates the diagnosis of sacroiliitis in patients with suspected spondylarthritis: results of a prospective multicenter French cohort study. <i>Arthritis Rheum.</i> 2012;64(5):1412-1419.	Observational-Dx	489 patients	To assess the performance of CT scanning for ascertaining sacroiliitis in patients with suspected SpA.	After training, interreader reliability was moderate for sacroiliitis grading on radiographs (kappa = 0.59), excellent on CT scans (kappa = 0.91), and excellent for ascertaining sacroiliitis on both radiographs (kappa = 1) and CT scans (kappa = 0.96). The first and second readers considered the quality of imaging to be excellent in 66% and 67%, respectively, of the radiographs (kappa = 0.88) and in 93% and 92%, respectively, of the CT scans (kappa = 0.93). Concordance between radiographs and CT scans was low for sacroiliitis grading (kappa = 0.08) or ascertainment (kappa = 0.16). Definite sacroiliitis was ascertained on radiographs in 6 patients (3.5%) (confirmed by CT scans in 4 patients) and on CT scans in 32 patients (18.5%). A history of uveitis was associated with definite sacroiliitis on radiographs ($P=0.04$) and CT scans ($P<0.0001$).	2
15. Fam AG, Rubenstein JD, Chin-Sang H, Leung FY. Computed tomography in the diagnosis of early ankylosing spondylitis. <i>Arthritis Rheum.</i> 1985;28(8):930-937.	Observational-Dx	28 patients	To define the role of CT in the evaluation of sacroiliitis in patients with early symptomatic AS.	Compared with conventional radiography, CT improved delineation of the SIJ and revealed more abnormalities and higher grades of sacroiliitis; this was significant in patients with early AS of 13 years duration. Quantitative sacroiliac scintigraphy showed higher SIJ: sacrum ratios of radioisotope uptake in patients with AS compared with controls. However, its diagnostic usefulness was limited by the frequency of inconsistent results and the lack of specificity.	2
16. Lee YH, Hwang JY, Lee SW, Lee J. The clinical usefulness of multidetector computed tomography of the sacroiliac joint for evaluating spondyloarthropathies. <i>Korean J Intern Med.</i> 2007;22(3):171-177.	Observational-Dx	37 patients	To investigate the diagnostic value of performing MDCT of the SIJ in the evaluation of AS patients.	MDCT detected more bilateral sacroiliitis as compared to the plain radiography (86.5% vs 75.7%, respectively), and MDCT yielded a higher grade of disease in 32.4% (right SIJ) and 24.3% (left SIJ) of the patients. More patients satisfied the modified New York criteria with using MDCT as compared with that when using the plain radiography (81.1% vs 54.1%, respectively, $P=0.002$).	2

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17. Inanc N, Atagunduz P, Sen F, Biren T, Turoglu HT, Direskeneli H. The investigation of sacroiliitis with different imaging techniques in spondyloarthropathies. <i>Rheumatol Int.</i> 2005;25(8):591-594.	Observational-Dx	54 patients	To compare the value of different imaging techniques in SpA patients with inflammatory low back pain.	The sensitivities of plain radiography, quantitative SI scintigraphy, and MRI were 61%, 55%, and 89%, respectively, among the patients with SpA. MRI and quantitative SI scintigraphy detected sacroiliitis in 97% and 49% of group A, respectively. In group B, these results were 76% and 66%, respectively.	2
18. Strobel K, Fischer DR, Tamborrini G, et al. 18F-fluoride PET/CT for detection of sacroiliitis in ankylosing spondylitis. <i>Eur J Nucl Med Mol Imaging.</i> 2010;37(9):1760-1765.	Observational-Dx	15 patients with AS; 13 patients with mechanical low back pain	To evaluate the performance of 18F-fluoride PET/CT for the diagnosis of SIJ arthritis in patients with active AS.	The mean SIJ/S ratio of 30 quantified joints in the AS group was 1.66 (range 1.10–3.07) with PET/CT, and the mean SIJ/S ratio of 26 quantified joints in the mechanical low back pain group was 1.12 (range 0.71–1.52). The area under the receiver operating characteristic curve for SIJ arthritis was 0.84. With plain radiography as the gold standard and taking an SIJ/S ratio of >1.3 as the threshold, the sensitivity, specificity and accuracy on a per patient basis were 80%, 77% and 79%, respectively. On a per SIJ basis, the greatest sensitivity (94%) was found in grade 3 sacroiliitis (n = 16).	3
19. Taniguchi Y, Ariei K, Kumon Y, et al. Positron emission tomography/computed tomography: a clinical tool for evaluation of enthesitis in patients with spondyloarthritides. <i>Rheumatology (Oxford).</i> 2010;49(2):348-354.	Observational-Dx	55 total patients	To evaluate the accuracy of FDG-PET/CT in determining the presence of enthesitis in patients with SpAs.	Images of PET/CT scans of the shoulder, hip and knee joints revealed that FDG accumulated at the entheses in SpA and in the synovium in rheumatoid arthritis patients. The maximum standardized uptake value [mean (standard deviation)] were statistically higher in SpA patients compared with rheumatoid arthritis patients at the entheses of lumbar spinous process [4.83 (1.15) vs 1.42 (0.34); $P<0.05$, respectively], pubic symphysis [3.93 (0.87) vs 1.35 (0.31); $P<0.05$, respectively] and ischial tuberosity [4.76 (1.5) vs 1.35 (0.42); $P<0.05$, respectively]. The positive frequencies of lumbar spinous processes and ischial tuberosity evaluated by PET/CT scan in the SpA group were significantly higher than that evaluated by MRI.	2

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20. Wendling D, Blagosklonov O, Streit G, Lehuede G, Toussiro E, Cardot JC. FDG-PET/CT scan of inflammatory spondylodiscitis lesions in ankylosing spondylitis, and short term evolution during anti-tumour necrosis factor treatment. <i>Ann Rheum Dis.</i> 2005;64(11):1663-1665.	Review/Other-Dx	N/A	To underline the potential interests and limitations of an FDG-PET/CT scan in AS.	N/A	4
21. Bruijnen ST, van der Weijden MA, Klein JP, et al. Bone formation rather than inflammation reflects ankylosing spondylitis activity on PET-CT: a pilot study. <i>Arthritis Res Ther.</i> 2012;14(2):R71.	Observational-Dx	12 patients	To investigate the potential of PET/CT for imaging AS activity by the investigation of 3 different tracers in a stepwise approach with MRI and conventional radiographs as references for PET/CT data.	No increased FDG and [11C](R)PK11195 uptake was noticed on PET/CT scans of the first 10 patients. In contrast, MRI demonstrated a total of 5 bone edema lesions in 3 out of 10 patients. In the 2 additional AS patients scanned with 18F-fluoride PET/CT, 18F-fluoride depicted 17 regions with increased uptake in both vertebral column and SIJs. In contrast, FDG depicted only 3 lesions, with an uptake of 5 times lower compared to 18F-fluoride, and again no [11C](R)PK11195 positive lesions were found. In these 2 patients, MRI detected 9 lesions and 6 out of 9 matched with the anatomical position of 18F-fluoride uptake. Conventional radiographs showed structural bony changes in 11 out of 17 18F-fluoride PET positive lesions.	3
22. D'Agostino MA, Sarau A, Chary-Valckenaere I, et al. Can we improve the diagnosis of spondyloarthritis in patients with uncertain diagnosis? The EchoSpA prospective multicenter French cohort. <i>Joint Bone Spine.</i> 2012;79(6):586-590.	Review/Other-Dx	500 patients	To evaluate the performance of power Doppler US for the diagnosis of SpA alone or combined with other clinical, laboratory and imaging findings in patients consulting for a suspected SpA.	Between January 2005 and September 2007, 489 patients were included (96% of the target population). 19 patients (0.2%) retired their informed consensus or were lost to follow-up immediately after their inclusion. At baseline, mean age of the 470 remaining patients was 40 years, mean duration of symptoms was 6.1 years; 42% of them were HLA-B27+ and 63% were female. Primary inclusion criterion was IBP in 53%, inflammatory arthralgia in 27%, enthesitis or dactylitis in 9%, B27+U in 8% and familiarity in 4%. Follow-up is still ongoing.	4

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23. Unlu E, Pamuk ON, Cakir N. Color and duplex Doppler sonography to detect sacroiliitis and spinal inflammation in ankylosing spondylitis. Can this method reveal response to anti-tumor necrosis factor therapy? <i>J Rheumatol.</i> 2007;34(1):110-116.	Observational-Dx	39 patients with AS and 14 healthy controls	To investigate the role of color and duplex Doppler US in the detection of SIJ and spinal inflammation, as well as response to anti-TNF therapy in patients with AS.	In patients with AS, RI values of SIJ and of lumbar vertebral and thoracic vertebral areas were lower than in controls (all $P \leq 0.01$). In AS patients with active disease according to BASDAI, RI values of thoracic vertebral ($P=0.0013$) and lumbar vertebral ($P=0.027$) were significantly lower than in the inactive group. In the group with active AS, SIJ RI was nonsignificant lower ($P=0.16$). After anti-TNF therapy, there were significant increases in mean SIJ RI ($P=0.028$) and lumbar vertebral RI ($P=0.039$), and a nonsignificant increase in thoracic vertebral RI ($P>0.05$).	3
24. Mohammadi A, Ghasemi-rad M, Aghdashi M, Mladkova N, Baradaransafa P. Evaluation of disease activity in ankylosing spondylitis; diagnostic value of color Doppler ultrasonography. <i>Skeletal Radiol.</i> 2013;42(2):219-224.	Observational-Dx	51 patients with AS and sacroiliitis and 30 control subjects	To assess color Doppler US as a potential diagnostic tool in suspected sacroiliitis in comparison with MRI representing the gold standard.	MRI demonstrated active disease in 27 and inactive disease in 24 patients. Color Doppler US detected pulsatile monophasic wave spectral waveform flow in 22 patients with the active disease, and triphasic in 7 patients with inactive disease and in 8 control patients. The sensitivity, specificity, positive predictive value and negative predictive value for active sacroiliitis detection with color Doppler US were 82% (95% CI, 68%–91%), 92% (95% CI, 85%–96%), 91% (95% CI, 84%–96%), and 84% (95% CI, 70%–92%), respectively, for pulsatile monophasic wave spectral waveform Doppler US. MRI of SIJ was negative in all 30 (60 SIJ) control participants.	4

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25. Arslan H, Sakarya ME, Adak B, Unal O, Sayarlioglu M. Duplex and color Doppler sonographic findings in active sacroiliitis. <i>AJR Am J Roentgenol.</i> 1999;173(3):677-680.	Observational-Dx	38 patients	To describe the duplex and color Doppler US findings in active sacroiliitis.	Vascularization around the posterior portions of SIJs was seen in 41 joints of the 21 patients with active sacroiliitis, 9 joints of 6 patients with osteoarthritis, and 13 joints of 8 volunteers. The mean RI values were 0.62 +/- 0.13, 0.91 +/- 0.09, and 0.97 +/- 0.03, respectively. In the patients with active sacroiliitis, the mean RI value was 0.91 +/- 0.07 after therapy. The RI values for the patients with active sacroiliitis were significantly different from those of the patients with osteoarthritis ($P<.001$) and of the volunteers ($P<.001$). In addition, the RI values were significantly different before and after treatment in the patients with active sacroiliitis ($P<.001$).	3
26. Battistone MJ, Manaster BJ, Reda DJ, Clegg DO. Radiographic diagnosis of sacroiliitis--are sacroiliac views really better? <i>J Rheumatol.</i> 1998;25(12):2395-2401.	Review/Other-Dx	445 right SIJ and 442 left SIJ	To determine whether detailed oblique radiographs of the SIJs provide significant diagnostic advantage to a single AP projection of the pelvis in establishing the presence and severity of sacroiliitis.	Analysis of these data showed an agreement rate between AP views and SI views of 89.7% for the right SIJ radiographs and 86.4% for the left SIJ. There was no instance in which a patient with "unequivocal abnormalities" of the SIJ on the AP pelvis was read as having "normal" SI views. Similarly, there were no cases in which "normal" SIJ on AP pelvis films were read as having unequivocal abnormalities on SI views.	4
27. Weber U, Lambert RG, Ostergaard M, Hodler J, Pedersen SJ, Maksymowych WP. The diagnostic utility of magnetic resonance imaging in spondylarthritis: an international multicenter evaluation of one hundred eighty-seven subjects. <i>Arthritis Rheum.</i> 2010;62(10):3048-3058.	Observational-Dx	187 subjects	To systematically assess the diagnostic utility of MRI to differentiate patients with SpA from patients with nonspecific back pain and healthy volunteers, using a standardized evaluation of MRIs of the SIJs.	Diagnostic utility was high for all 5 readers, both for patients with AS (sensitivity 0.90, specificity 0.97, positive LR 44.6) and for patients with preradiographic IBP (sensitivity 0.51, specificity 0.97, positive LR 26.0). Diagnostic utility based solely on detection of BMO enhanced sensitivity (67%) for patients with IBP but reduced specificity (88%); detection of erosions in addition to BMO further enhanced sensitivity (81%) without changing specificity. A single lesion of the SIJ on MRI was observed in up to 27% of control subjects.	2

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28. Puhakka KB, Jurik AG, Egund N, et al. Imaging of sacroiliitis in early seronegative spondylarthropathy. Assessment of abnormalities by MR in comparison with radiography and CT. <i>Acta Radiol.</i> 2003;44(2):218-229.	Review/Other-Dx	41 patients	To analyze the type and frequency of abnormalities of the SIJ in early SpA by MRI in comparison with CT and radiography, assess the most appropriate MRI sequences to be used, and introduce a new way of grading MRI abnormalities of the SIJ.	MRI and CT had equal efficacy superior to radiography in staging of erosions and osseous sclerosis. Only MRI allowed visualization and grading of active inflammatory changes in the subchondral bone and surrounding ligaments in addition to bone marrow fatty accumulations. T2-weighted sequences did not contribute to assessment of sacroiliitis.	4
29. Althoff CE, Feist E, Burova E, et al. Magnetic resonance imaging of active sacroiliitis: do we really need gadolinium? <i>Eur J Radiol.</i> 2009;71(2):232-236.	Observational-Dx	105 patients	To compare these 2 pulse sequences in terms of diagnosis, diagnostic confidence, and quantification of inflammatory changes.	Active sacroiliitis was diagnosed in 46 patients and ruled out in 34 using STIR, whereas findings were inconclusive in 25 patients. The corresponding numbers for T1/Gd were 47, 44, and 14. Diagnostic confidence was significantly lower for STIR (7.3+/-2.6) compared with T1/Gd (8.7+/-1.9) ($P<0.001$). The sum scores were 2.5 (+/-3.3) for STIR and 2.2 (+/-3.2) for T1/Gd for the right SIJ and 2.2 (+/-2.9) (STIR) and 1.9 (+/-3.1) (T1/Gd) for the left SIJ. Agreement was high with intraclass correlation coefficient values of 0.86 for the right SIJ and 0.90 for the left SIJ and positive correlation ($r=0.62$ right, 0.60 left).	3
30. de Hooge M, van den Berg R, Navarro-Compan V, et al. Magnetic resonance imaging of the sacroiliac joints in the early detection of spondyloarthritis: no added value of gadolinium compared with short tau inversion recovery sequence. <i>Rheumatology (Oxford).</i> 2013;52(7):1220-1224.	Review/Other-Dx	127 patients	To investigate the additional value of T1/Gd compared with T1 and STIR sequence in detecting active lesions of the SIJ typical of SpA in a prospective cohort study, the SpondyloArthritis Caught Early (SPACE) cohort, and to assess its influence on final MRI diagnosis of the SIJ (MRI-SIJ) based on the ASAS definition of active sacroiliitis.	A total of 127 patients received an MRI-SIJ at baseline and 67 patients also received an MRI-SIJ at 3 months follow-up since the Gd protocol was added some months after the start of the SPACE project. 25/127 patients (19.7%) with a baseline MRI-SIJ and 14/67 patients (20.6%) with a follow-up MRI-SIJ presented BMO on the STIR sequence sufficient to fulfill the ASAS definition for a positive MRI-SIJ. In 8 patients, additional synovitis and/or capsulitis/enthesitis was observed; however, no additional BMO was visualized on T1/Gd. One patient, without clinical diagnosis of axSpA, showed synovitis as an isolated finding.	4

**Chronic Back Pain Suspected Sacroiliitis Spondyloarthropathy
EVIDENCE TABLE**

Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
31. Madsen KB, Egund N, Jurik AG. Grading of inflammatory disease activity in the sacroiliac joints with magnetic resonance imaging: comparison between short-tau inversion recovery and gadolinium contrast-enhanced sequences. <i>J Rheumatol.</i> 2010;37(2):393-400.	Observational-Dx	40 patients	To investigate the potential concordance of 2 different MRI sequences, STIR and fat-saturated T1/Gd contrast medium to detect active bone marrow abnormalities at the SIJs in patients with SpA.	There was a significant positive correlation between the activity scores obtained by STIR and Gd-enhanced sequences ($P < 0.0001$). Agreement in the detection of bone marrow abnormalities occurred in 60 of the 80 joints, 35 with and 25 without signs of active disease. Discordance with STIR-positive marrow activity scores occurred in only 11 joints; Gd-enhanced positive scores in 9 joints. The STIR sequence detected remnants of marrow activity in the periphery of chronic fatty replacement not seen or partly obscured on the Gd sequence. Small subchondral enhancing lesions may not be scored on the STIR sequence, mostly because of reduced image resolution.	3
32. Baraliakos X, Hermann KG, Landewe R, et al. Assessment of acute spinal inflammation in patients with ankylosing spondylitis by magnetic resonance imaging: a comparison between contrast enhanced T1 and short tau inversion recovery (STIR) sequences. <i>Ann Rheum Dis.</i> 2005;64(8):1141-1144.	Observational-Dx	38 patients	To compare the performance of 2 different MRI sequences-T1-weighted, fat saturated, spin echo after application of contrast medium, and STIR sequences-to detect spinal inflammation in patients with AS.	Intraclass correlation coefficients were excellent 0.91 and 0.86 for the Gd-DTPA and STIR sequences, respectively. The overall correlation of the single MRI scores for both sequences was also good ($r = 0.84, P = 0.01$). The intrarater variance was 6.71 and 9.41 and the interrater variance was 13.16 and 19.04 for the Gd-DTPA and STIR sequences, respectively. The smallest detectable distance was 4.7 and 5.6 for the Gd-DTPA and STIR sequences, respectively. The concordance rate for both sequences was 83.5% (range 80.5%–87.7% in the 3 spinal segments). Inflammatory spinal lesions were found in 10.1% of the vertebral units in the STIR sequence but not in the T1/Gd-DTPA sequence, while the T1/Gd-DTPA sequence showed inflammatory lesions in 6.4% of the vertebral units that were found normal by STIR.	2

**Chronic Back Pain Suspected Sacroiliitis Spondyloarthritis
EVIDENCE TABLE**

Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
33. Marzo-Ortega H, McGonagle D, O'Connor P, et al. Baseline and 1-year magnetic resonance imaging of the sacroiliac joint and lumbar spine in very early inflammatory back pain. Relationship between symptoms, HLA-B27 and disease extent and persistence. <i>Ann Rheum Dis.</i> 2009;68(11):1721-1727.	Observational-Dx	54 patients; 22 controls	To use MRI to study the SIJ and lumbar spine and explore the relationship between sites and extent of inflammation and HLA-B27 status over 12 months.	At baseline 46/54 (85%) patients had BMO (SIJs and lumbar spine) compared with 40% in the control group. The majority of affected patients had inflammation at the SIJ level (96% (n = 44); 23.5% (n = 12) lumbar spine) and 28.3% (n = 13) at both sites simultaneously. The SIJ activity score confirmed more severe inflammation (BMO grade 2 or 3: 52.2%) in the IBP group (controls = BMO grade 1: 100%; $P < 0.001$). HLA-B27 was associated with both the severity ($P = 0.009$) and number of baseline SIJ lesions ($P = 0.045$) and with persistence (SIJ or lumbar spine) at 1 year ($P = 0.02$). 90% of reattenders fulfilled European Spondyloarthritis Study Group criteria; 73.5% showed MRI inflammation despite clinical improvement (median BASDAI 5.65 to 3.05; $P < 0.009$).	3
34. Bennett AN, Rehman A, Hensor EM, Marzo-Ortega H, Emery P, McGonagle D. Evaluation of the diagnostic utility of spinal magnetic resonance imaging in axial spondylarthritis. <i>Arthritis Rheum.</i> 2009;60(5):1331-1341.	Observational-Dx	174 patients; 11 controls	To compare MRI patterns of disease in active SpA, degenerative arthritis, and malignancy.	The physician diagnosis was SpA in 64 subjects, degenerative arthritis in 45 subjects, malignancy in 45 subjects, other diagnoses in 20 subjects, and normal in 11 subjects. There was 72% agreement between the imaging diagnosis and physician diagnosis. End-plate edema, degenerative discs, and Romanus lesions were frequently observed in patients with any of the 3 major diagnoses. Single Romanus lesions were of low diagnostic utility for SpA, but ≥ 3 Romanus lesions (LR 12.4) and severe Romanus lesions (LR infinite) in younger subjects were highly diagnostic of SpA. Posterior element BMO lesions of mild or moderate grade were also highly diagnostic of SpA (LR 14.5). The most common diagnostic confusion was between SpA and degenerative arthritis, since both had Romanus lesions present and the presence/absence of degenerative discs did not change the diagnostic assessment.	2

**Chronic Back Pain Suspected Sacroiliitis Spondyloarthritis
EVIDENCE TABLE**

Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
35. Bennett AN, Rehman A, Hensor EM, Marzo-Ortega H, Emery P, McGonagle D. The fatty Romanus lesion: a non-inflammatory spinal MRI lesion specific for axial spondyloarthritis. <i>Ann Rheum Dis.</i> 2010;69(5):891-894.	Observational-Dx	174 patients with back pain and 11 controls	To assess the diagnostic utility of fatty Romanus lesions for SpA in a population with chronic back pain.	29 patients had fatty Romanus lesions: 31% (20/64) of patients with spondyloarthritis, 13% (6/45) with degenerative arthritis, 4% (2/45) with spinal malignancy, 5% (1/20) with 'other' diagnoses; none of 11 normal subjects had fatty Romanus lesions. The majority of the fatty Romanus lesions in SpA 60% (135/226) were present in the thoracic spine. The diagnostic utility of fatty Romanus lesions for SpA (LR = 4.7) was significantly ($P < 0.05$) greater than for other diagnoses and increased further (LR = 12.6, $P < 0.05$) when more than 5 fatty Romanus lesions were present. Of note 5/20 (25%) patients with SpA with fatty Romanus lesions had no diagnostic bone-oedema lesions on fat-suppressed MRI, suggesting that fatty Romanus lesions may be useful diagnostically in axial-SpA.	3
36. Bochkova AG, Levshakova AV, Bunchuk NV, Braun J. Spinal inflammation lesions as detected by magnetic resonance imaging in patients with early ankylosing spondylitis are more often observed in posterior structures of the spine. <i>Rheumatology (Oxford).</i> 2010;49(4):749-755.	Observational-Dx	29 patients	To study the localization and extent of spinal inflammation in patients with AS in detail.	Consecutive patients with AS (n = 29), who fulfilled the modified New York criteria, were examined by MRI: 67% male, 93% HLA-B27-positive, median age 27.5 (18–49) years, median disease duration 7.5 (1.5–24) years. IBP, median duration 36 (1–240) months, with a mean intensity of 40 mm on a visual analogue scale (20–100) was present in 26 patients (89.7%), and the BASDAI was >40 in 21 patients (72.4%). MRI evidence of spinal inflammation at any site was found in 27 patients (96.5%), whereas radiographic changes were only seen in 6.9% ($P < 0.05$). Patients with a short history of IBP (n = 11) had significantly more lesions in posterior spinal structures than in vertebral bodies: 90.9% vs 27.2%, respectively ($P < 0.003$). Isolated changes in posterior spinal structures were seen in 8 of these patients (72.7%), whereas, in contrast, patients with a longer history of IBP (n = 18) had significantly more inflammation in vertebral bodies: 88.9% vs 27.2%, respectively ($P < 0.01$).	2

**Chronic Back Pain Suspected Sacroiliitis Spondyloarthritis
EVIDENCE TABLE**

Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
37. Blachier M, Coutanceau B, Dougados M, et al. Does the site of magnetic resonance imaging abnormalities match the site of recent-onset inflammatory back pain? The DESIR cohort. <i>Ann Rheum Dis</i> . 2013;72(6):979-985.	Review/Other-Dx	648 patients	To assess whether the site of axial pain (thoracic spine, lumbar spine or buttock(s)) was associated with the site of MRI lesions in patients with recent IBP suggesting spondyloarthritis.	Of the 648 patients with complete data, 61% had thoracic pain, 91.6% lumbar pain and 79.2% buttock pain. MRI inflammation was seen in 19%, 21% and 46% of patients at the thoracic, lumbar and SIJ sites, respectively. By multivariate analysis, pain was significantly associated with MRI inflammation only at the same site (adjusted OR thoracic pain 1.71; 95% CI, 1.09 to 2.67; $P=0.02$; adjusted OR lumbar pain 2.53; 95% CI, 1.03 to 6.20; $P=0.04$; adjusted OR buttock pain 2.86; 95% CI, 1.84 to 4.46; $P<0.0001$). Pain site was not significantly associated with the site of structural MRI changes, except for buttock pain and SIJ structural MRI changes (adjusted OR buttock pain 1.89; 95% CI, 1.22 to 2.90; $P=0.004$). The association between pain site and site of MRI inflammation persisted in the subgroups with normal or doubtful SIJ radiographs or with ASAS international Society criteria for SpA.	4
38. Maksymowych WP, Chiowchanwisawakit P, Clare T, Pedersen SJ, Ostergaard M, Lambert RG. Inflammatory lesions of the spine on magnetic resonance imaging predict the development of new syndesmophytes in ankylosing spondylitis: evidence of a relationship between inflammation and new bone formation. <i>Arthritis Rheum</i> . 2009;60(1):93-102.	Review/Other-Dx	29 patients	To determine whether a vertebral corner that demonstrates an active corner inflammatory lesion on MRI in patients with AS is more likely to evolve into a de novo syndesmophyte visible on plain radiography than is a vertebral corner that demonstrates no active inflammation on MRI.	New syndesmophytes developed significantly more frequently in vertebral corners with inflammation (20%) than in those without inflammation (5.1%) seen on baseline MRI ($P\leq 0.008$ for all reader pairs). They also developed more frequently in vertebral corners where inflammation had resolved than in those where inflammation persisted after anti-TNF treatment. This was confirmed in the analysis of the prospective cohort, in which significantly more vertebral corners with inflammation (14.3%) compared with those without inflammation (2.9%) seen on baseline MRI developed new syndesmophytes ($P\leq 0.003$ for all reader pairs).	4

**Chronic Back Pain Suspected Sacroiliitis Spondyloarthropathy
EVIDENCE TABLE**

Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
39. Hermann KG, Baraliakos X, van der Heijde DM, et al. Descriptions of spinal MRI lesions and definition of a positive MRI of the spine in axial spondyloarthritis: a consensual approach by the ASAS/OMERACT MRI study group. <i>Ann Rheum Dis.</i> 2012;71(8):1278-1288.	Review/Other-Dx	N/A	To define characteristic MRI findings in the spine of patients with SpA and provide a definition of a positive spinal MRI for inflammation and structural changes.	A total of 6 different types of lesions were described for inflammation—AP spondylitis, spondylodiscitis, arthritis of costovertebral joints, arthritis of zygoapophyseal joints and enthesitis of spinal ligaments—and another 4 for structural changes—fatty deposition, erosions, syndesmophytes and ankylosis. In the literature review, 4 relevant papers were identified. AP spondylitis and fat depositions at vertebral edges were considered as the most typical findings in SpA. Based on expert consensus and taking the literature review into consideration, a positive spinal MRI for inflammation was defined as the presence of AP spondylitis in ≥ 3 sites. Evidence of fatty deposition at several vertebral corners was found to be suggestive of axial SpA, especially in younger adults. ASAS members (n=56) approved these definitions by voting in January 2010.	4
40. Wang YX, Griffith JF, Deng M, et al. Vertebral body corner oedema vs gadolinium enhancement as biomarkers of active spinal inflammation in ankylosing spondylitis. <i>Br J Radiol.</i> 2012;85(1017):e702-708.	Observational-Dx	32 patients	To investigate the relative performance of T2-weighted STIR and fat-suppressed T1-weighted Gd contrast-enhanced sequences in depicting active inflammatory lesions in AS.	For the pretreatment lesion status, the intraclass correlation coefficients comparing STIR readings and contrast-enhanced readings were 0.69+/-0.23 for Reader 1 and 0.65+/-0.21 for Reader 2. At baseline, the mean ASspiMRI-a score was 15.4% and 17.7% higher for contrast-enhanced images than for STIR images for Reader 1 and Reader 2, respectively. After infliximab treatment, Reader 1 rated an ASspiMRI-a score reduction of 50.8+/-33.6% and 25.3+/-35.3% for STIR images and contrast-enhanced images, respectively, whereas Reader 2 rated an ASspiMRI-a score reduction of 42.4+/-50.4% and 32.9+/-35.6% for STIR images and contrast-enhanced images, respectively.	2
41. American College of Radiology. ACR Appropriateness Criteria®: Low Back Pain. Available at: https://acsearch.acr.org/docs/69483/Narrative/ .	Review/Other-Dx	N/A	Evidence-based guidelines to assist referring physicians and other providers in making the most appropriate imaging or treatment decision for a specific clinical condition.	N/A	4

**Chronic Back Pain Suspected Sacroiliitis Spondyloarthropathy
EVIDENCE TABLE**

Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
42. Westerveld LA, Verlaan JJ, Oner FC. Spinal fractures in patients with ankylosing spinal disorders: a systematic review of the literature on treatment, neurological status and complications. <i>Eur Spine J.</i> 2009;18(2):145-156.	Review/Other-Dx	93 articles	A systematic review aims to increase the knowledge on treatment, neurological status and complications of trauma patients with ankylosed spines (due to AS or DISH) and admitted with spine fractures, by pooling data previously published in the literature.	93 articles were included, representing 345 AS patients and 55 DISH patients. Most fractures were localized in the cervical spine and resulted from low energy impact. Delayed diagnosis often occurred due to patient and doctor related factors. On admission 67.2% of the AS patients and 40.0% of the DISH patients demonstrated neurologic deficits, while secondary neurological deterioration occurred frequently. Surgical or nonoperative treatment did not alter the neurological prospective for most patients. The complication rate was 51.1% in AS patients and 32.7% in DISH patients. The overall mortality within 3 months after injury was 17.7% in AS and 20.0% in DISH.	4
43. Caron T, Bransford R, Nguyen Q, Agel J, Chapman J, Bellabarba C. Spine fractures in patients with ankylosing spinal disorders. <i>Spine (Phila Pa 1976).</i> 2010;35(11):E458-464.	Observational-Dx	112 patients	To describe the spine fracture characteristics, current treatments, and their results in patients with ankylosing spinal disorders, such as AS and DISH, with the hypothesis that complication and mortality rates are high.	Of the 122 spine fractures in 112 consecutive patients with ankylosing spinal disorders, the majority were transdiscal extension injuries, most commonly affecting C6-C7. 81% of the patients had at least 1 major medical comorbidity. Spinal cord injury was present in 58% of the patients, 34% of whom improved by at least 1 American Spinal Injury Association grade. 19% of patients had delayed diagnosis of their spine fracture, 81% of whom had resulting neurologic compromise. Surgery was performed on 67% of patients, consisting primarily of multilevel posterior instrumentation 3 levels above and below the injury. 84% of all patients had at least 1 complication. Mortality was 32% and correlated with age ≥ 70 ($P < 0.0001$), number of comorbidities ($P < 0.0001$), and low-energy mechanism of injury ($P = 0.009$). AS patients were younger ($P = 0.03$) and had a higher risk of delayed fracture diagnosis ($P = 0.012$), but were otherwise similar to DISH patients.	4

**Chronic Back Pain Suspected Sacroiliitis Spondyloarthropathy
EVIDENCE TABLE**

Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
44. Campagna R, Pessis E, Feydy A, et al. Fractures of the ankylosed spine: MDCT and MRI with emphasis on individual anatomic spinal structures. <i>AJR Am J Roentgenol.</i> 2009;192(4):987-995.	Review/Other-Dx	N/A	To illustrate the spectrum of MDCT and MRI appearances of spinal fractures in AS and DISH.	Spinal fractures associated with AS and DISH usually involve the 3 columns of the spine, and injury to the posterior osteoligamentous component is the hallmark of these fractures. Osseous and ligamentous injuries can be accurately visualized and analyzed with MDCT with multiplanar reformation and with MRI.	4
45. Wang YF, Teng MM, Chang CY, Wu HT, Wang ST. Imaging manifestations of spinal fractures in ankylosing spondylitis. <i>AJNR Am J Neuroradiol.</i> 2005;26(8):2067-2076.	Observational-Dx	12 cases	To characterize spinal fractures and determine the value of different imaging modalities in AS.	Fractures were found in the cervical spine in 3 patients and in the thoracolumbar spine in 9. The 3 columns of the spine were involved in 11 patients. A routine 4-mm axial CT was not enough to demonstrate all fractures and ligament tears. The sensitivities of 3D-CT scans for demonstration of the following problems were similar to that of MRI and were better than that of conventional radiographs: tearing of the posterior longitudinal ligament, the thoracic spinous process fracture, and the facet fracture. MRI depicted these following findings that usually were not shown on conventional radiographs or 3D-CT scans: cord deformity, soft tissue disruption, and ligament tears in the posterior column. MRI also showed avascular necrosis and occult fractures better than conventional radiographs or CT scans.	3
46. American College of Radiology. ACR Appropriateness Criteria®: Suspected Spine Trauma. Available at: https://acsearch.acr.org/docs/69359/Narrative/ .	Review/Other-Dx	N/A	Evidence-based guidelines to assist referring physicians and other providers in making the most appropriate imaging or treatment decision for a specific clinical condition.	N/A	4

**Chronic Back Pain Suspected Sacroiliitis Spondyloarthritis
EVIDENCE TABLE**

Reference	Study Type	Patients/ Events	Study Objective (Purpose of Study)	Study Results	Study Quality
47. Zochling J, van der Heijde D, Burgos-Vargas R, et al. ASAS/EULAR recommendations for the management of ankylosing spondylitis. <i>Ann Rheum Dis</i> . 2006;65(4):442-452.	Review/Other-Dx	22 patients	To develop evidence based recommendations for the management of AS as a combined effort of the 'ASessment in AS' international working group and the European League Against Rheumatism.	The final recommendations considered the use of non-steroidal anti-inflammatory drugs (conventional non-steroidal anti-inflammatory drugs, coxibs, and co-prescription of gastroprotective agents), disease modifying antirheumatic drugs, treatments with biological agents, simple analgesics, local and systemic steroids, non-pharmacological treatment (including education, exercise, and physiotherapy), and surgical interventions. Three general recommendations were also included. Research evidence (categories I-IV) supported 11 interventions in the treatment of AS. Strength of recommendation varied, depending on the category of evidence and expert opinion.	4

Evidence Table Key

Study Quality Category Definitions

- *Category 1* The study is well-designed and accounts for common biases.
- *Category 2* The study is moderately well-designed and accounts for most common biases.
- *Category 3* There are important study design limitations.
- *Category 4* The study is not useful as primary evidence. The article may not be a clinical study or the study design is invalid, or conclusions are based on expert consensus. For example:
 - a) the study does not meet the criteria for or is not a hypothesis-based clinical study (e.g., a book chapter or case report or case series description);
 - b) the study may synthesize and draw conclusions about several studies such as a literature review article or book chapter but is not primary evidence;
 - c) the study is an expert opinion or consensus document.

Dx = Diagnostic

Tx = Treatment

Abbreviations Key

AP = Anterior/posterior

AS = Ankylosing spondylitis

BMO = Bone marrow oedema

CI = Confidence interval

CT = Computed tomography

DISH = Diffuse idiopathic skeletal hyperostosis

FDG-PET = Fluorine-18-2-fluoro-2-deoxy-D-glucose-positron emission tomography

Gd = Gadolinium

Gd-DTPA = Gadolinium-diethylenetriamine pentaacetic acid

IBP=Inflammatory back pain

LR = Likelihood ratio

MDCT = Multidetector computed tomography

MRI = Magnetic resonance imaging

OR = Odds ratio

RI= Resistive index

SIJ = Sacroiliac joint

SpA = Axial spondyloarthritis

STIR = Short tau inversion recovery

TNF = Tumor necrosis factor

US = Ultrasound