Axial Spondyloarthritis:

Burden of the Disease and Diagnosis

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Burden of the Disease in Patients with axSpA

Disease Manifestations in Patients with axSpA

1st symptom in
75% patients

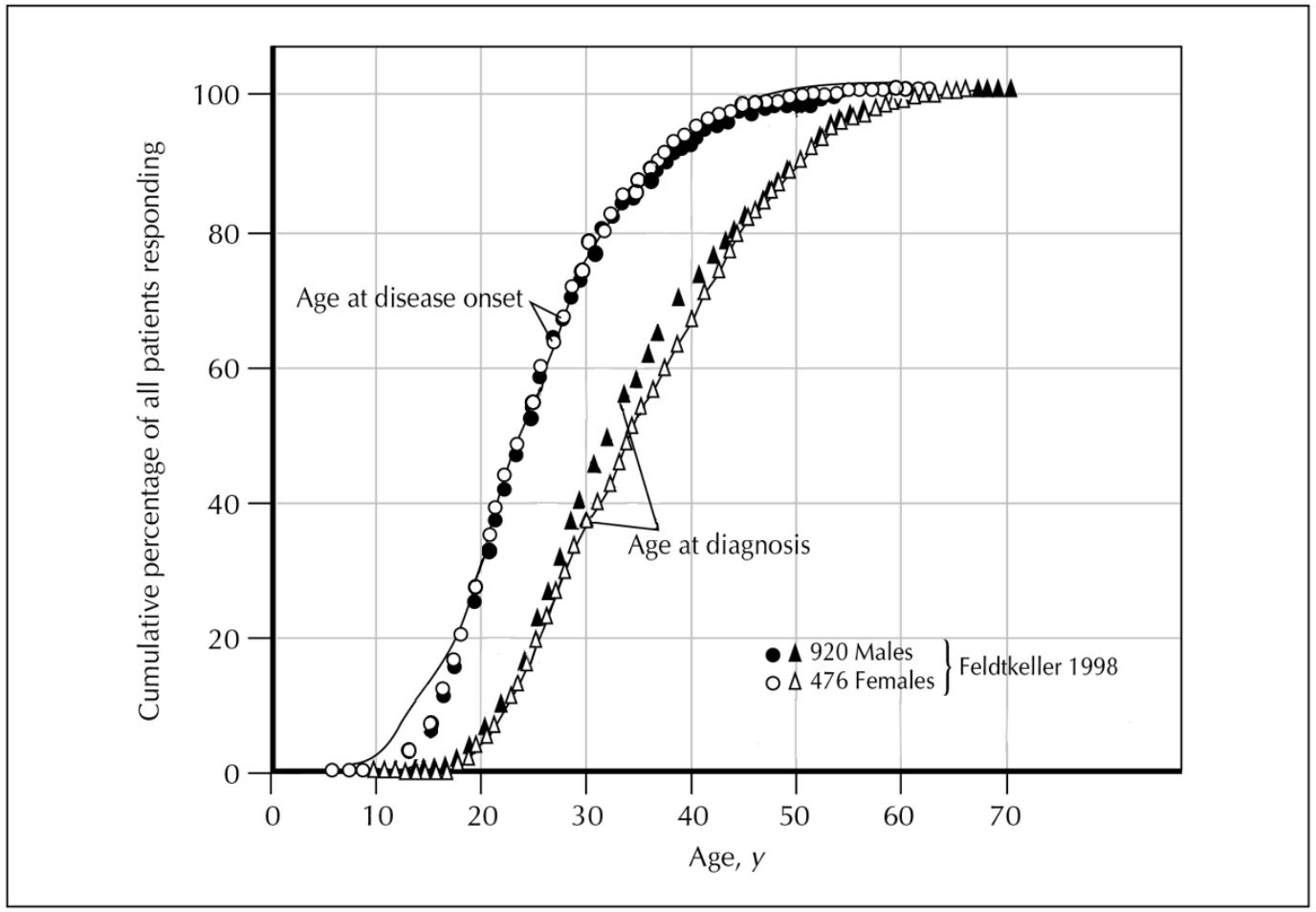
Inflammatory
characteristics (70%)

Years

- Peripheral arthritis ~40%[1,2]
- Enthesitis ~25%[3]
- Dactylitis ~6%[4]
- Uveitis 30–40%[4,5]
- IBD 5–10%[4,6]
- Psoriasis ~10%[6]

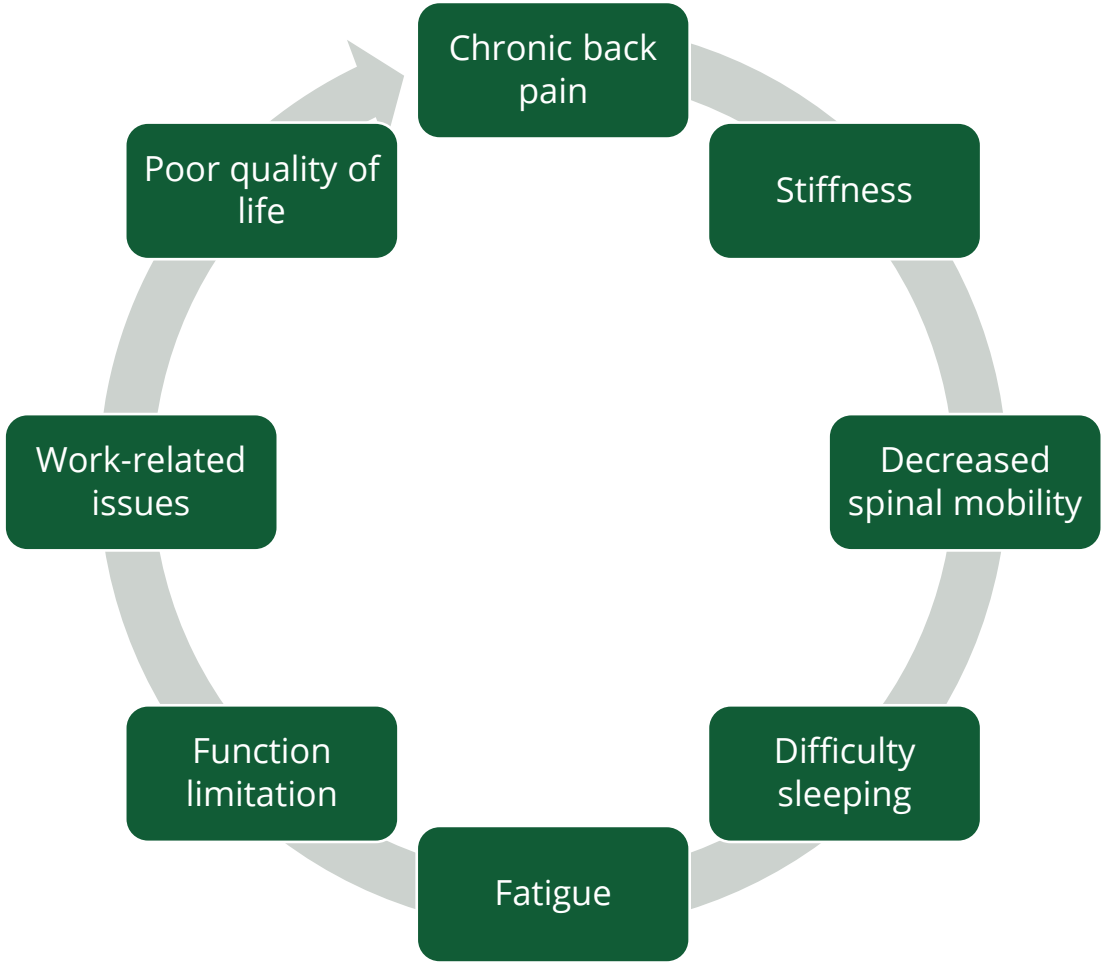
Navarro-Compán V and Sepriano A, et al. Ann Rheum Dis 2021;80:1511–21

Age at First Symptoms in axSpA



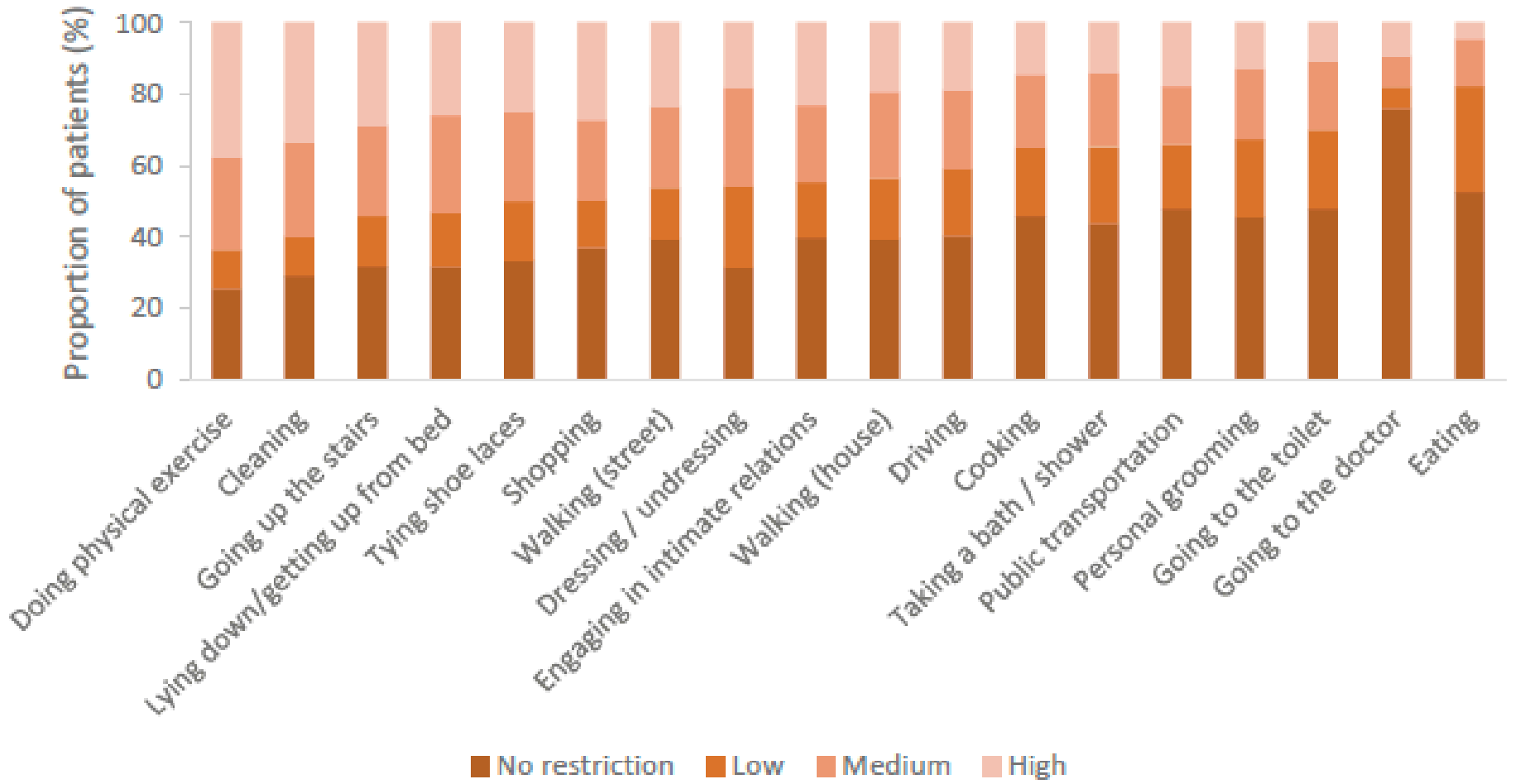
Feldtkeller E et al. Curr Opin Rheumatol 2000;12:239-247

Patients with axSpA Experience Substantial Burden of Disease



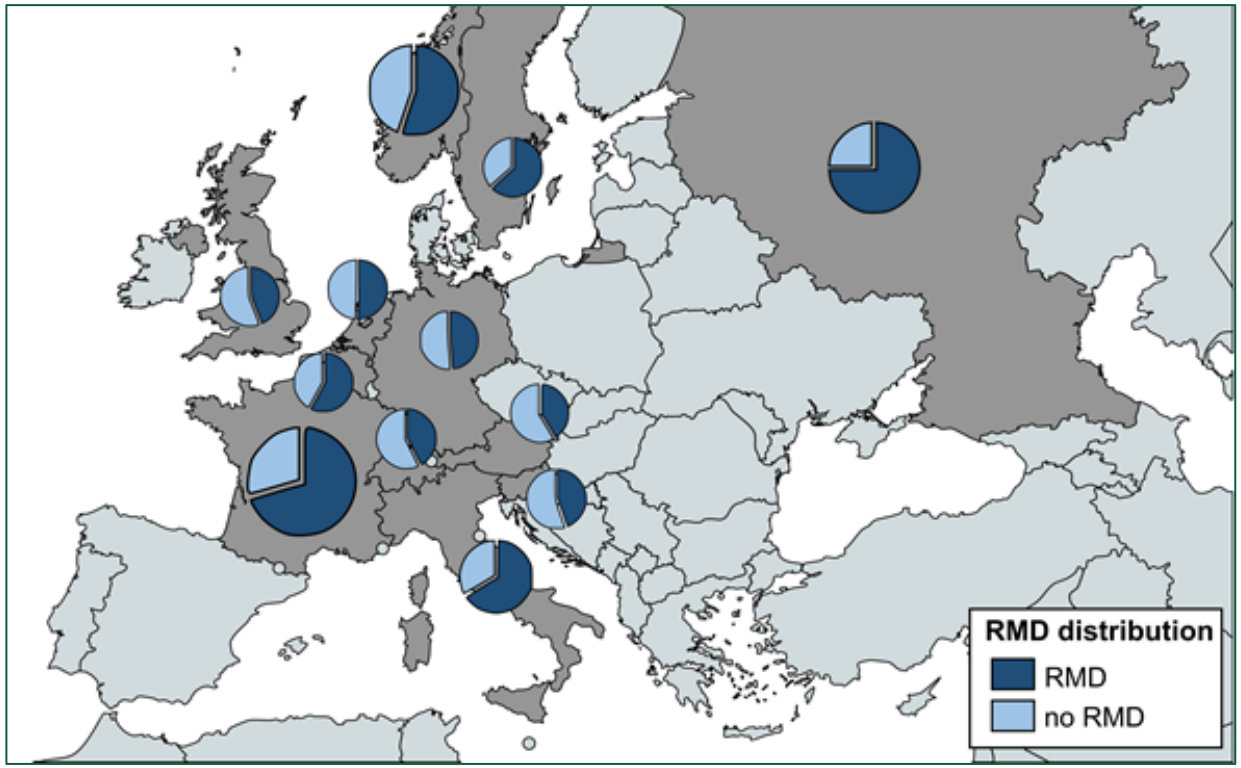
Navarro-Compán V and Sepriano A, et al. Ann Rheum Dis 2021;80:1511–21; Ward M. Arthritis Care Res 1999;12:247–55; Rudwaleit M, et al. Arthritis Rheum 2009;60:717–27; Kiltz U, et al. Arthritis Care Res 2012;64:1415–22; Sieper J, et al. Ann Rheum Dis 2009;68(Suppl. 2):ii1–ii44; Boonen A and van der Linden S. J Rheumatol Suppl 2006;78:4–11

Overall Functioning Limitations



Garrido-Cumbrera M et al. Axial Spondyloarthitis: Patient-Reported Impact in Europe. Springer. ISBN 978-3-030-970606-4.

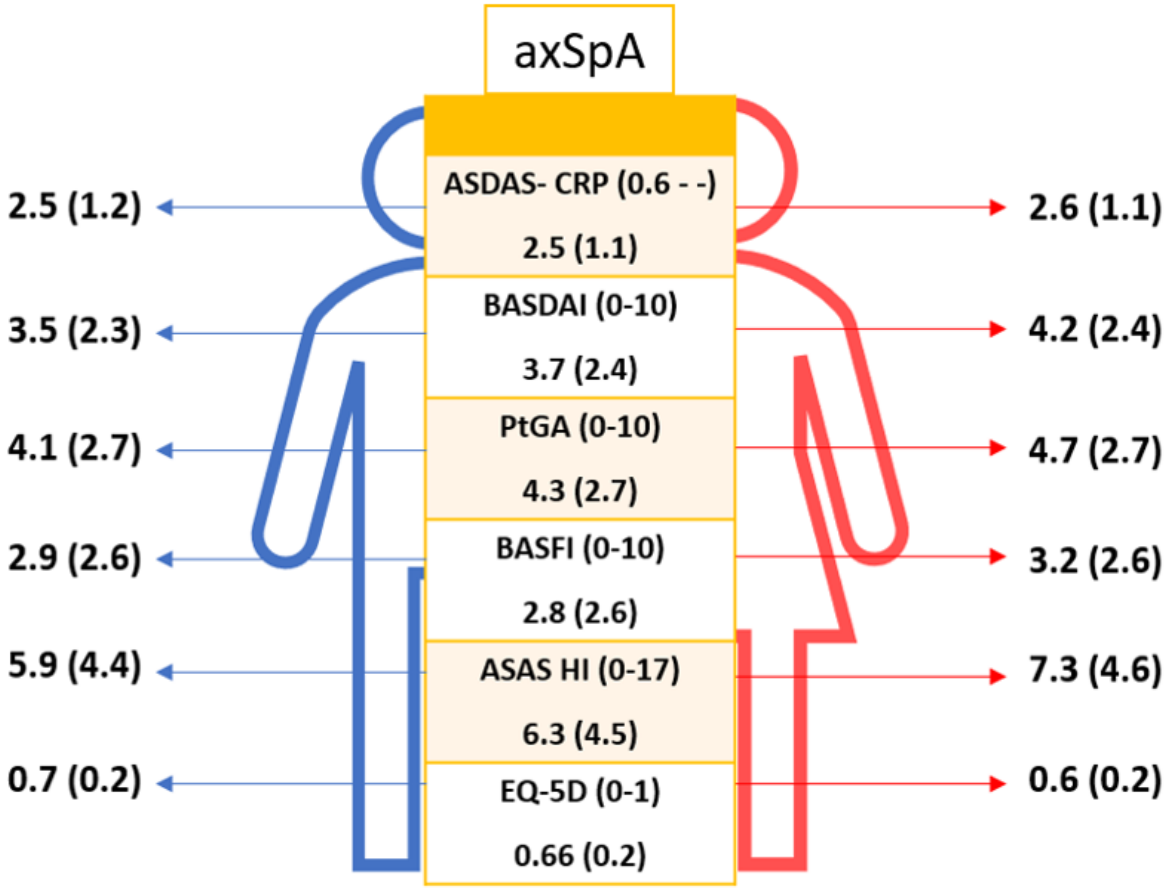
Risk of Mental Disorder



Compared with the general population, patients with axSpA show disproportionately worse mental health.
60.7% of patients reported risk of mental disorder (GHQ > 3), associated with disease activity, reported depression, anxiety, being unemployed or on sick leave, functional limitation and younger age.

Garrido-Cumbrera M, et al. RMD Open 2021;7:e001769. doi:10.1136/rmdopen-2021-001769

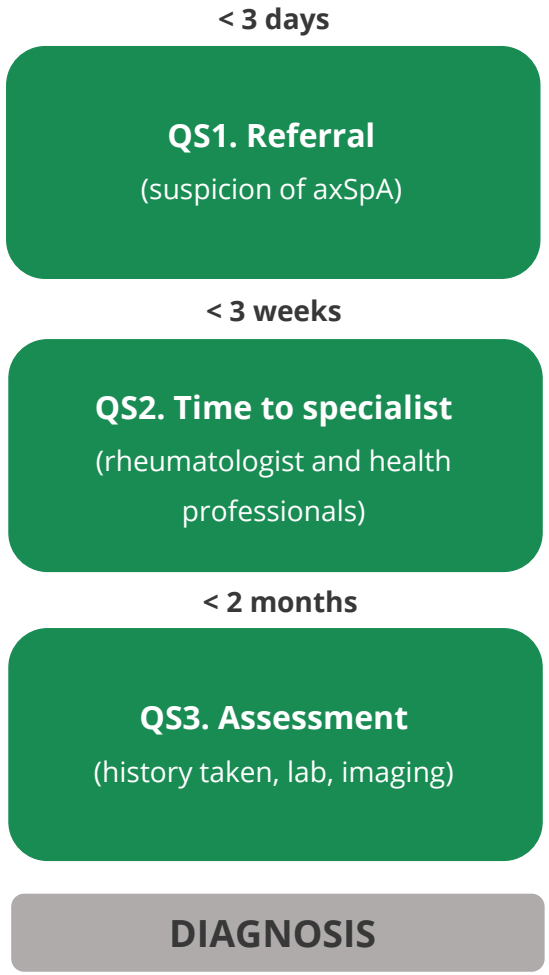
Patient Reported Outcomes in Males vs Females



Benavent D, et al. RMD Open 2022;8:e002514. doi:10.1136/rmdopen-2022-002514

Unmet Needs in axSpA: Diagnosis!

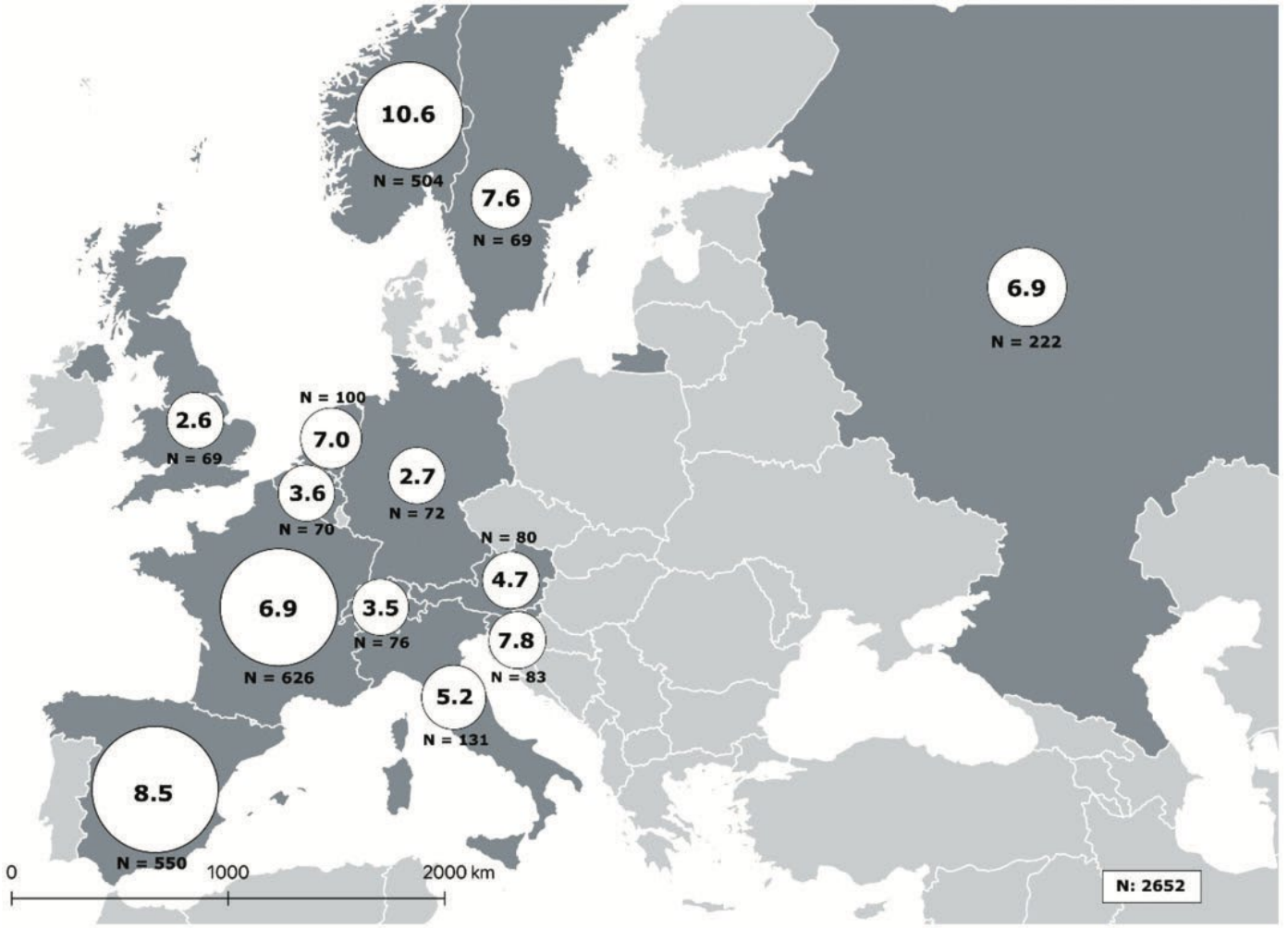
ASAS Quality Standards for axSpA: Referral and Diagnosis



Kiltz U, et al. Ann Rheum Dis 2020;79:193–201.
Navarro-Compán V and Sepriano A, et al. Ann Rheum Dis 2021;80:1511–21;


YOU
are
HERE
(FOR NOW)

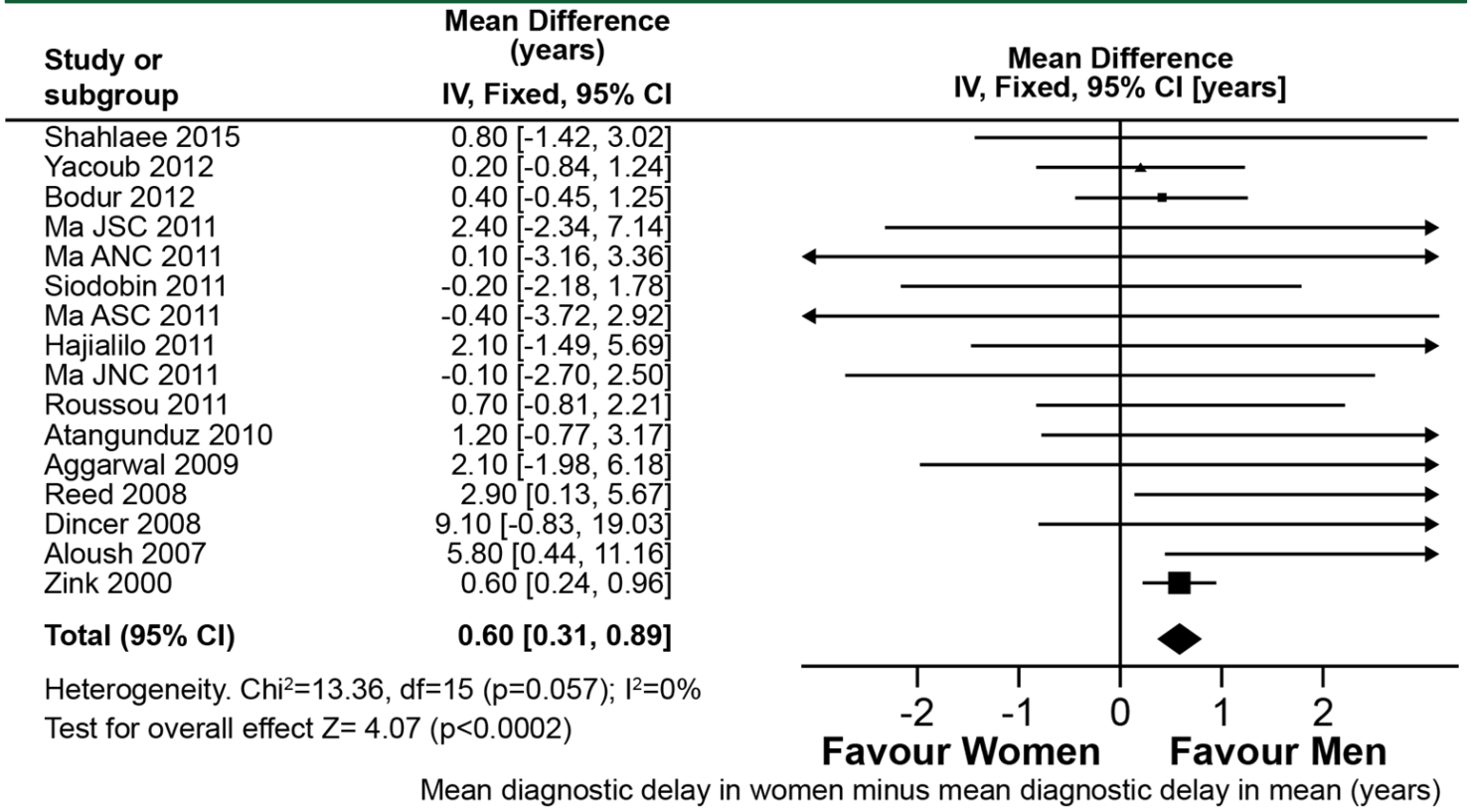
Diagnostic Delay: Data from the European Map of Axial Spondyloarthritis (EMAS): 2652 Patients Across 13 Countries



Garrido-Cumbrera M, et al. Rheumatology 2022;61:705–712

Female Patients with axSpA Have Longer Diagnostic Delay

Delay in women 8.8 years (7.4–10.1) vs. men 6.5 years (5.6–7.4), p=0.01

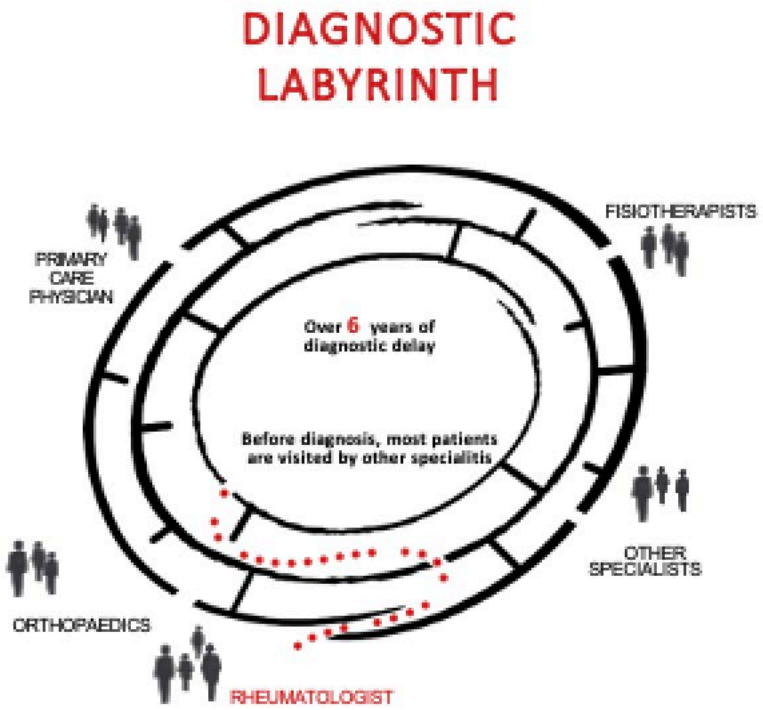


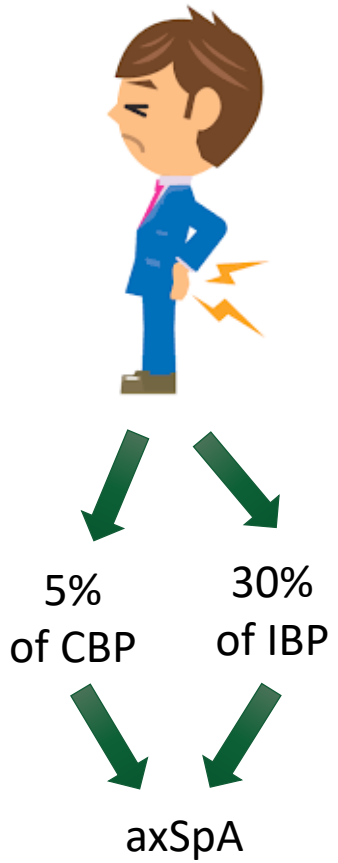
On average, it takes **7-22 months longer to diagnose a female** compared to a male spondyloarthritis patient

axSpA: axial spondyloarthritis, CI: confidence interval, df: degree of freedom

Adapted from Jovaní V, et al. J Rheumatol 2017;44;174–183.

Reasons for Diagnostic Delay





GOLD STANDARD DIAGNOSTICS

Garrido-Cumbrera M, et al. Spanish Atlas 2017

Associated Factors with Longer DD in Females: Medical Bias

n (%)	Females (n=54)	Males (n=96)
First correct diagnosis	6 (11.1)	29 (30.2)
One previous diagnosis	23 (42.6)	35 (36.5)
Two previous diagnoses	15 (27.8)	16 (16.7)
Three previous diagnoses	5 (9.3)	4 (4.1)
Four previous diagnoses	2 (3.7)	0
Five previous diagnoses	1 (1.9)	3 (3.1)
Don't know/No answer	2 (3.7)	9 (9.4)

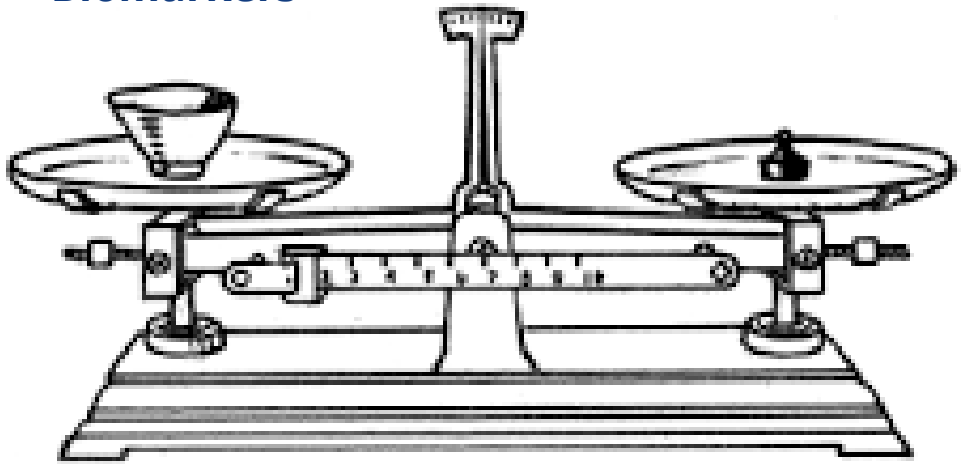
This study confirms the existence of gender bias in the medical care of spondyloarthritis, defined as the differential medical management and treatment of men and women.

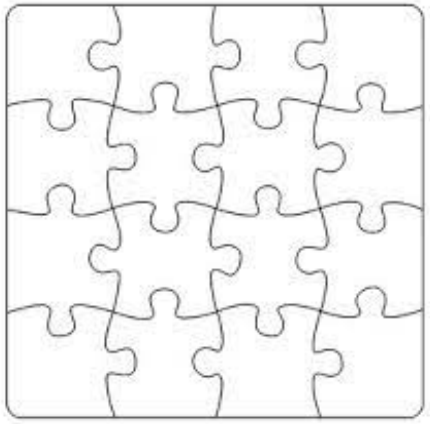
Jovani V, et al. PLoS One. 2018 Oct 12;13(10):e0205751.

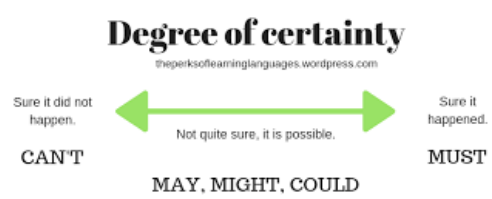
Diagnosis of axSpA

SpA key features
Biomarkers

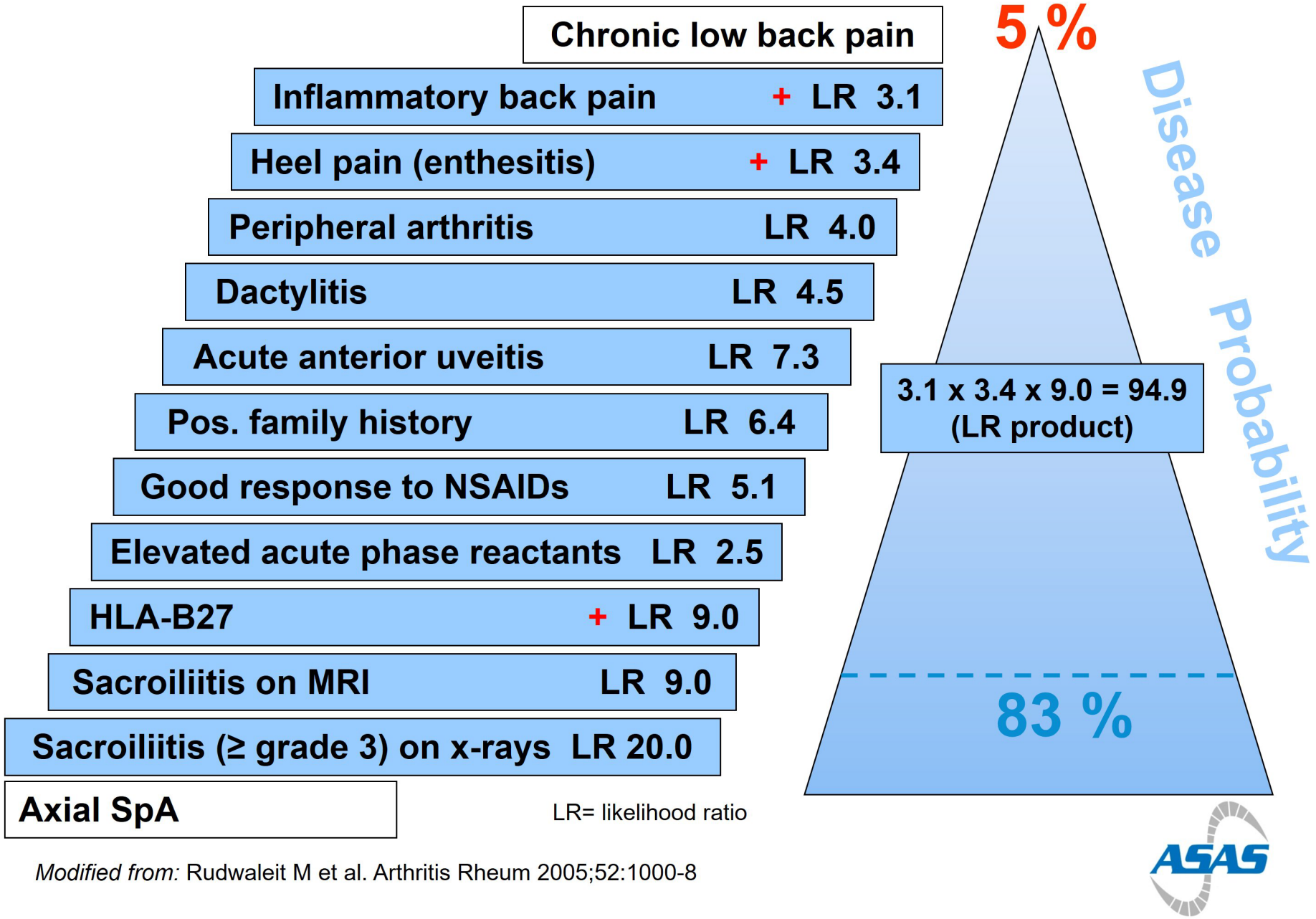
Imaging







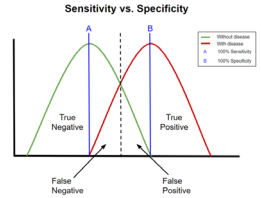
Diagnostic Pyramid for Axial Spondyloarthritis



Modified from: Rudwaleit M et al. Arthritis Rheum 2005;52:1000-8

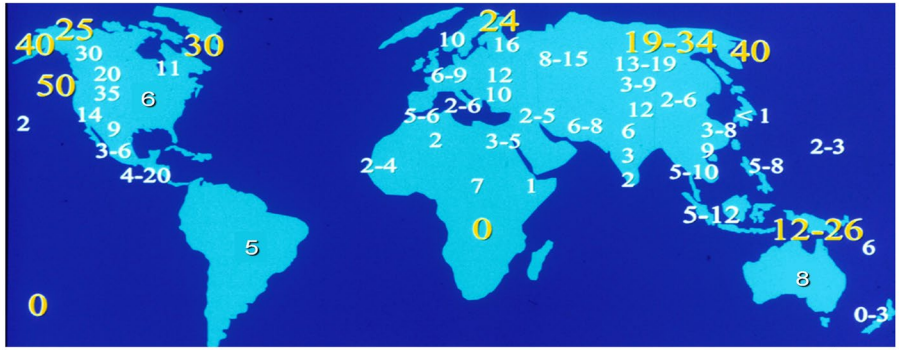
GOLD STANDARD DIAGNOSTICS

No Gold Standard Test for Diagnosis



HLA-B27

Percentage Prevalence of HLA-B27 in Various Populations of the World



Khan MA Curr Opin Rheumatol 1995;7:263-9
Khan MA J Clin Rheumatol 2008;14:50-2
Khan MA. In Mehra N (Ed). The HLA Complex in Biology and Medicine. New Dehli, India 2010; 422-46.
Reveille J et al. Arthritis Rheum 2012;64:1407-11

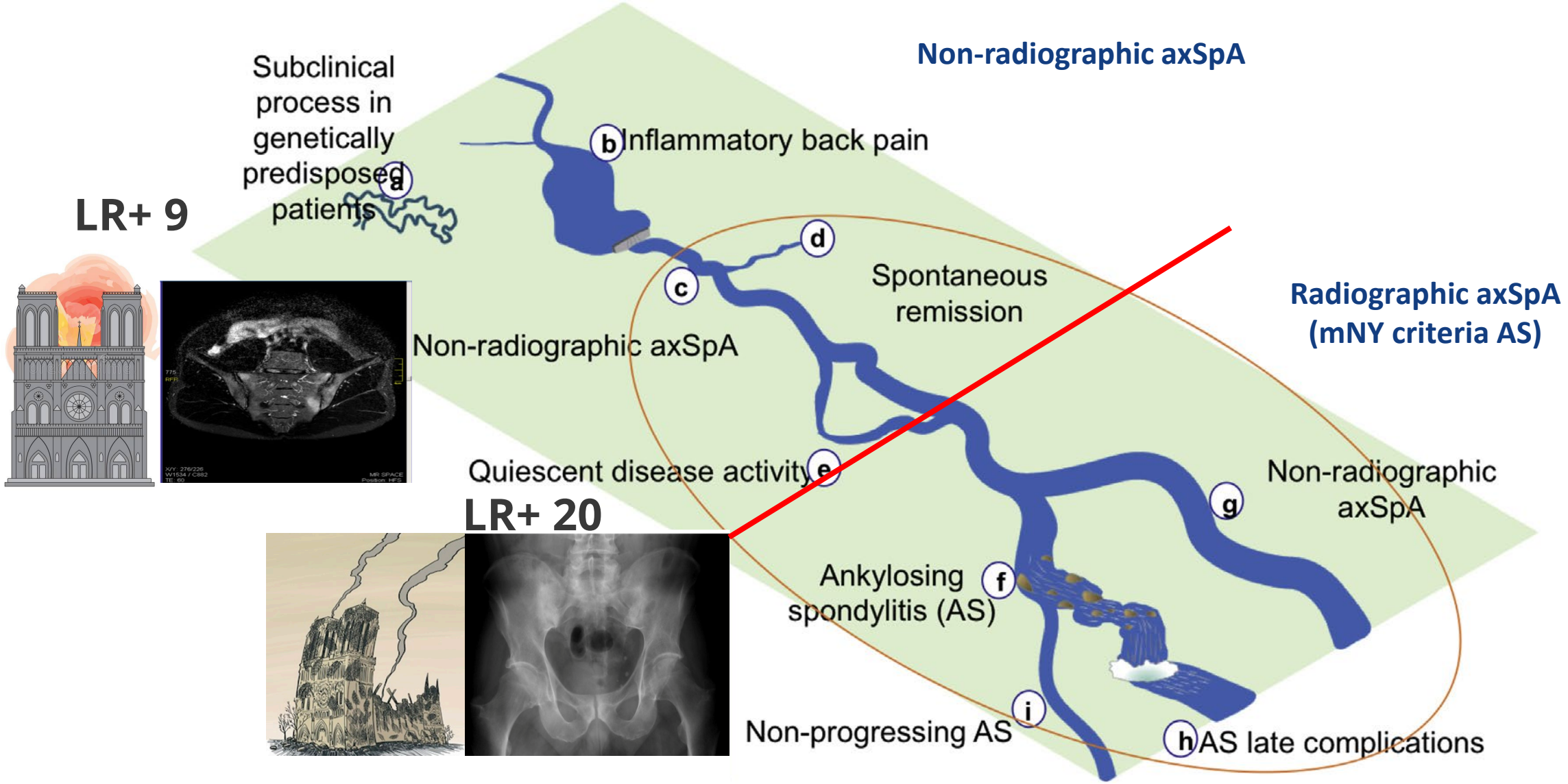
ASAS

- 70-90%
- General population (0-50%)

CRP/ESR

- Up to 40%
- Not very sensitive

Imaging

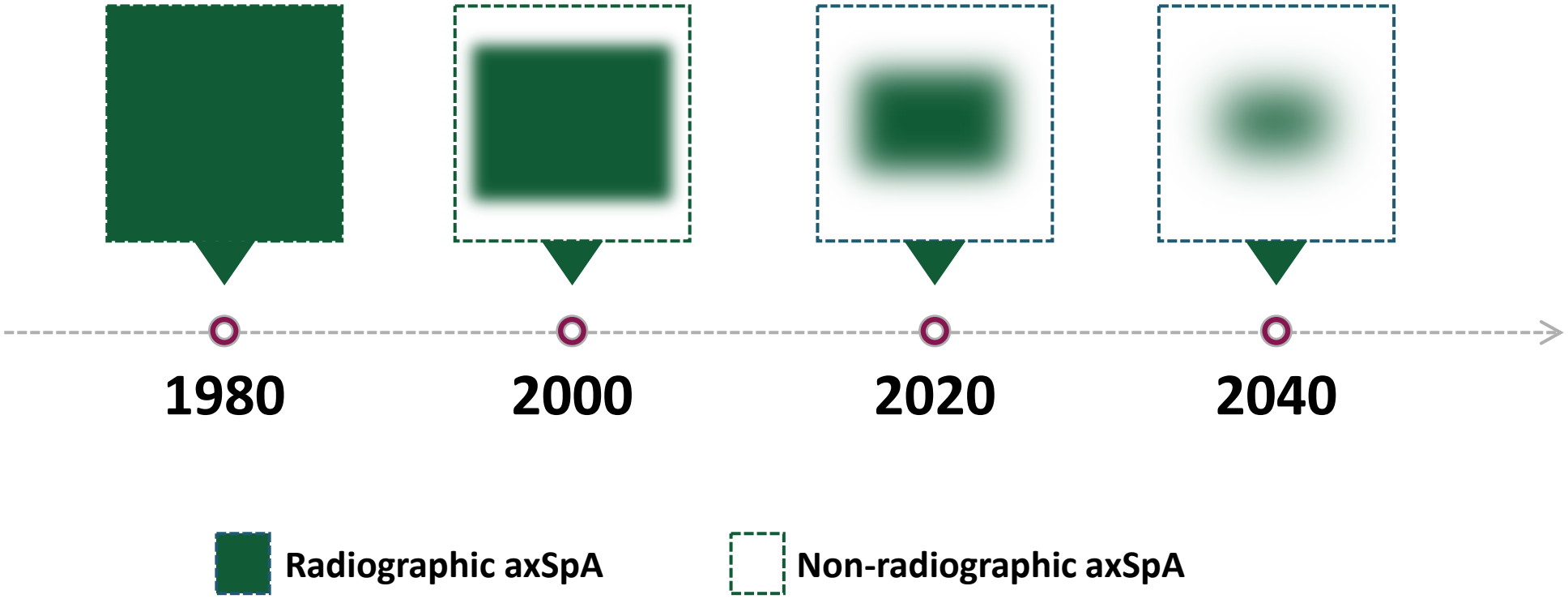


Garg N, et al. Best Pract Res Clin Rheumatol 2014;28(5):663-672.

Diagnostic Delay is Decreasing Overtime

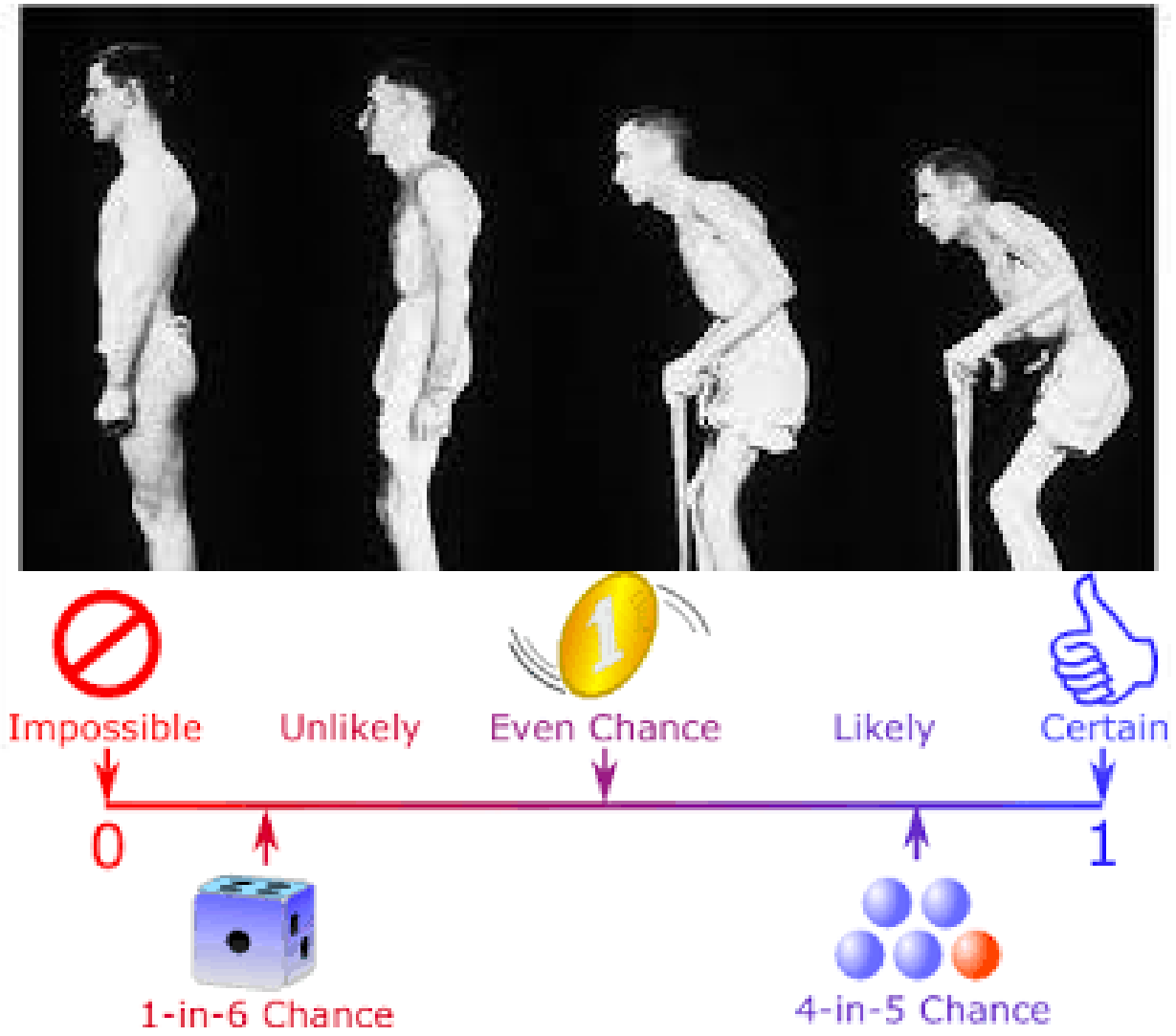
Garrido-Cumbrera M et al. Axial Spondyloarthitis: Patient-Reported Impact in Europe. Springer. ISBN 978-3-030-970606-4.

Distribution of axSpA subtypes at Diagnose

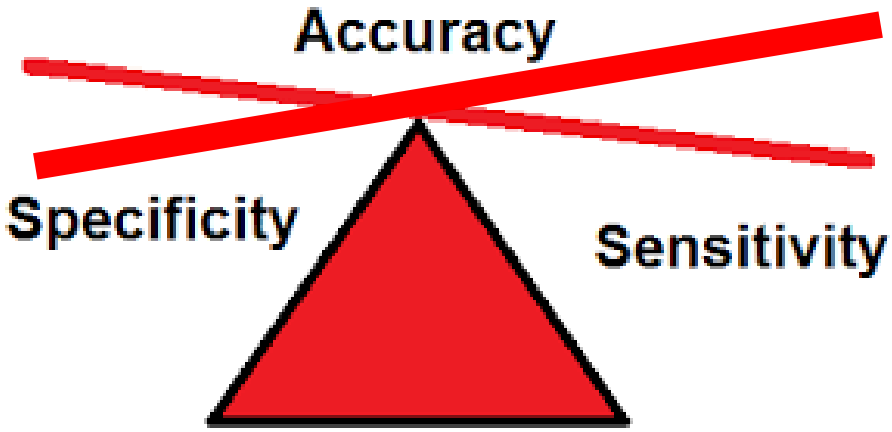


Benavent D et al. Clin Rheumatol 2021 Feb;40(2):501-512
Navarro-Compán V, Sepriano A, et al. Ann Rheum Dis 2021;80:1511-1521

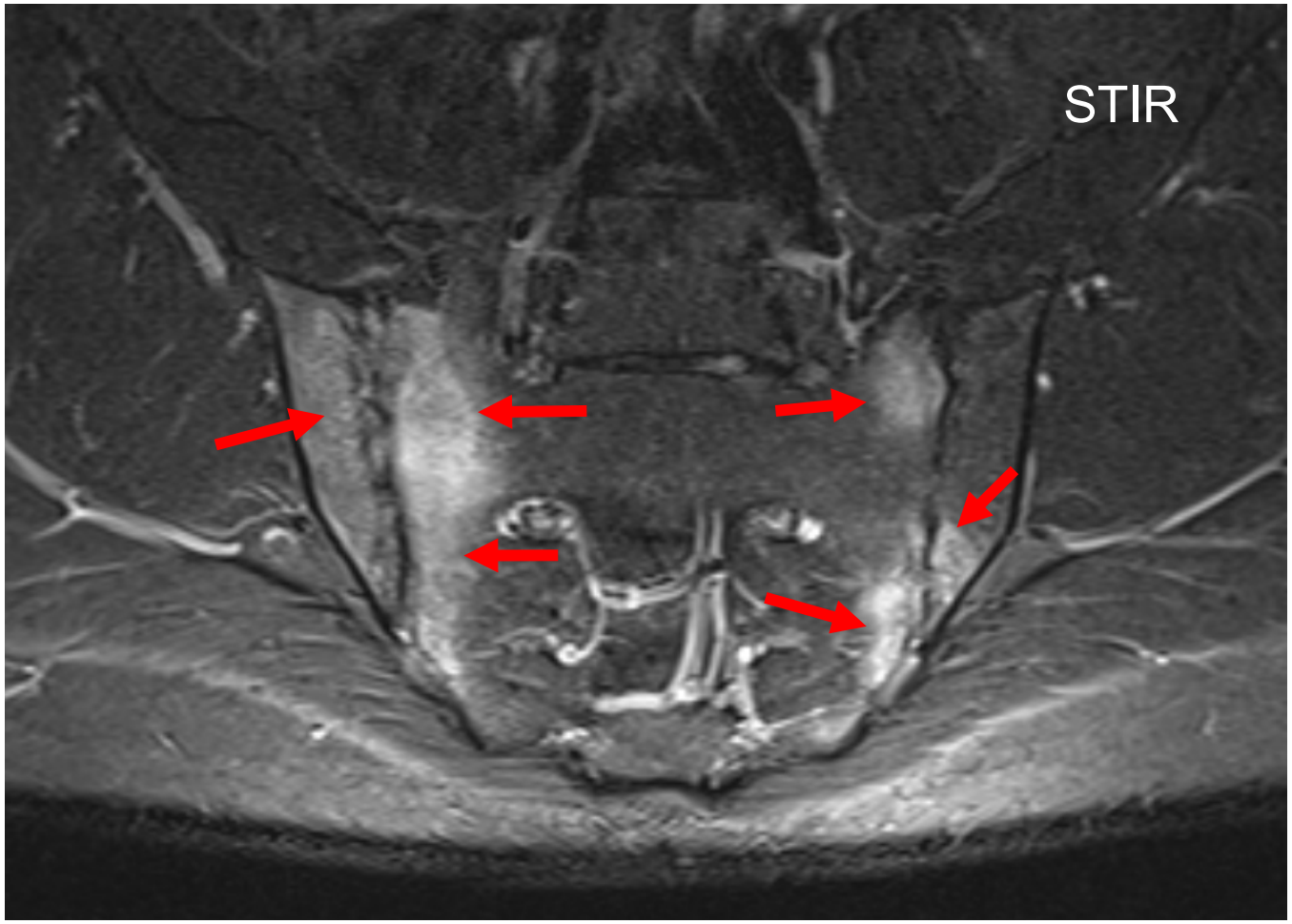
Certainty around Diagnose



Use of MRI of Sacroiliac Joints to Diagnose axSpA



Active Sacroiliitis



Arrows indicate subchondral bone marrow oedema

1. ASAS definition of positive MRI for the classification of SpA (figures 1A–C and 2)[3 4]: MRI evidence of bone marrow inflammation must be present, and the features required for the definition of active sacroiliitis on MRI are as follows:
   a. BME on a T2W sequence sensitive for free water (eg, STIR and T2FS) or bone marrow contrast enhancement on a T1W sequence (eg, T1FS post-Gd). BME is depicted as a hyperintense signal on STIR images and usually as a hypointense signal on T1 images. A hyperintense signal on contrast-enhanced, T1-weighted, fat-saturated images (T1 post-Gd) reflects increased vascularisation and is referred to as osteitis. The sacral interforaminal bone marrow signal forms the reference for assignment of normal signal in the bone marrow.[7]
   b. Inflammation must be clearly present and located in a typical anatomical area (subchondral bone).
   c. MRI appearance must be highly suggestive of SpA.

Lambert R, et al. Ann Rhem Dis. 2016;75:1958-63.

Presence and Factors Associated with BME on SIJ and Spinal MRI in General Population

	N	MRI-SI positive
de Winter et al, Arthritis Rheumatol 2018;70:1042-8		
Healthy controls 	47	23%
Frequent runners 	24	13%
Postpartum women 	7	57%
Weber et al, Arthritis Rheumatol 2018;70:736-45		
Hockey players 	22	35%
Recreational runners (before running) 	20	30%
Recreational runners (after running)	"	41%
Varkas et al, Rheumatology (Oxford) 2018;57:508-13		
Military recruits (before training) 	22	23%
Military recruits (after training)	"	36%

793 volunteers being <45 years

Predictors of BME on MRI-SIJ:

- HLA-B27+
- Delivery during the last year
- Back pain in the last 3 months

Predictors of BME on MRI-spine:

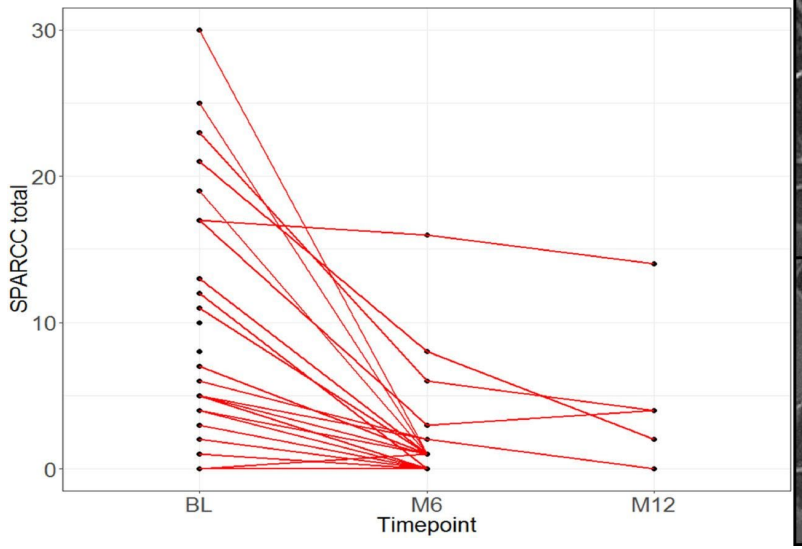
- Age
- Physically demanding work

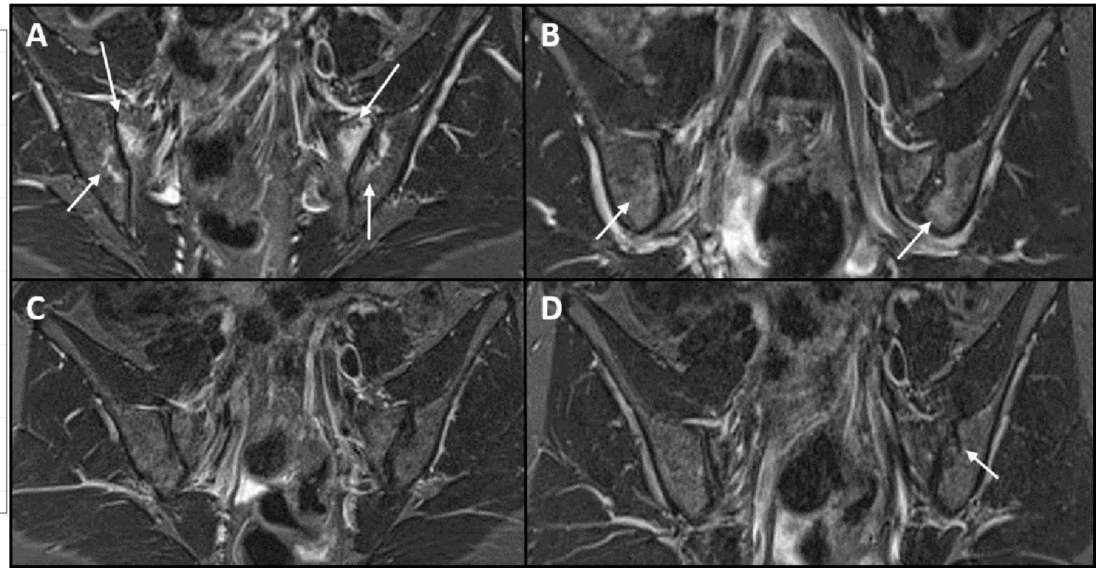
Recent data highlight the importance to consider the appropriate context and differential diagnosis when interpreting imaging findings during the diagnostic work-up of patients with suspected axSpA.

Navarro Compán V. Curr Rheumatol Rep. 2019 Jun 15;21(8):39.

Baraliakos X, et al. Ann Rheum Dis 2020 Nov 25.

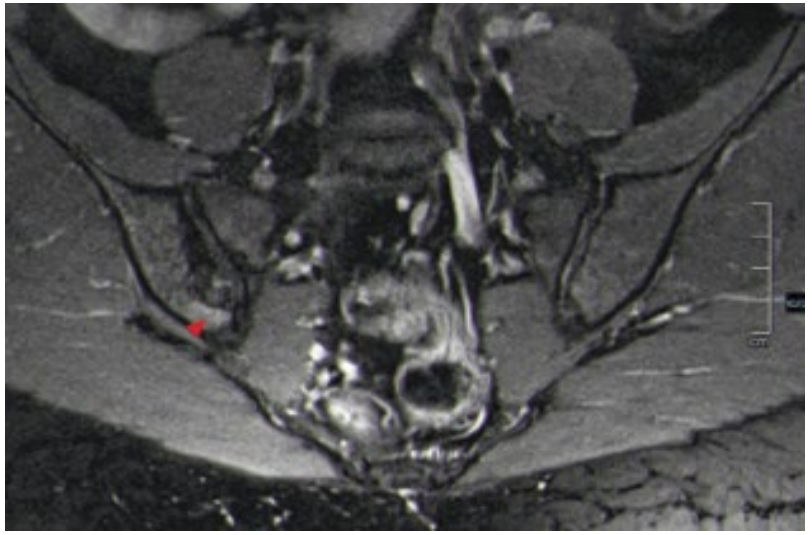
Postpartum BME



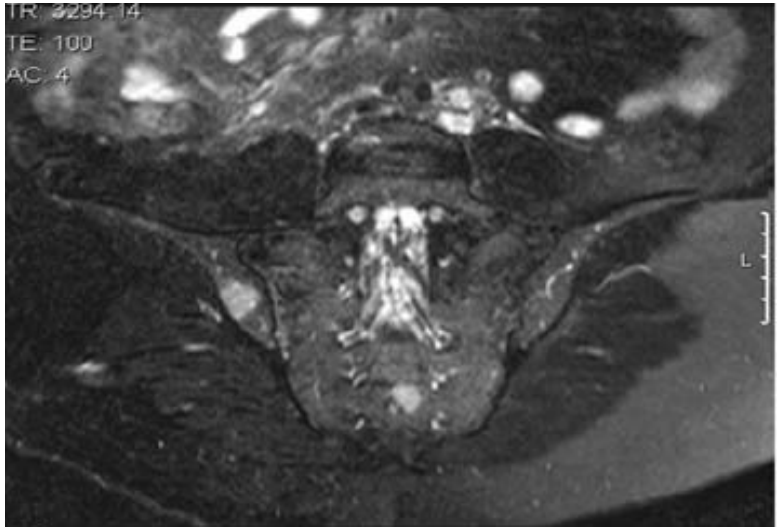


- A significant proportion of the women even fulfilled the ASAS definition of a positive MRI for sacroiliitis.
- These MRI findings decrease over time, even though a fraction retains BMO over 1year. When suspecting axSpA, our data indicate the need to wait at least 6 months to perform an MRI-SIJ in postpartum women, and, if positive, repeat the MRI after 12 months.

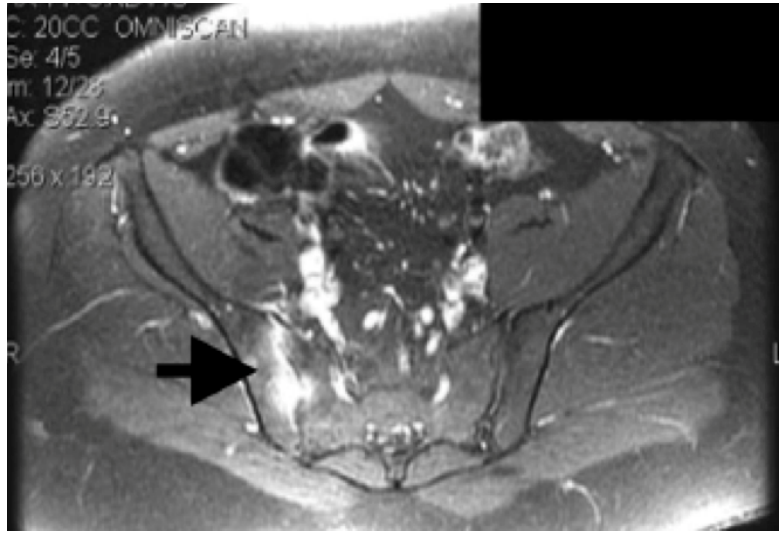
Renson T, et al. Ann Rheum Dis 2020;79(8):929-934.



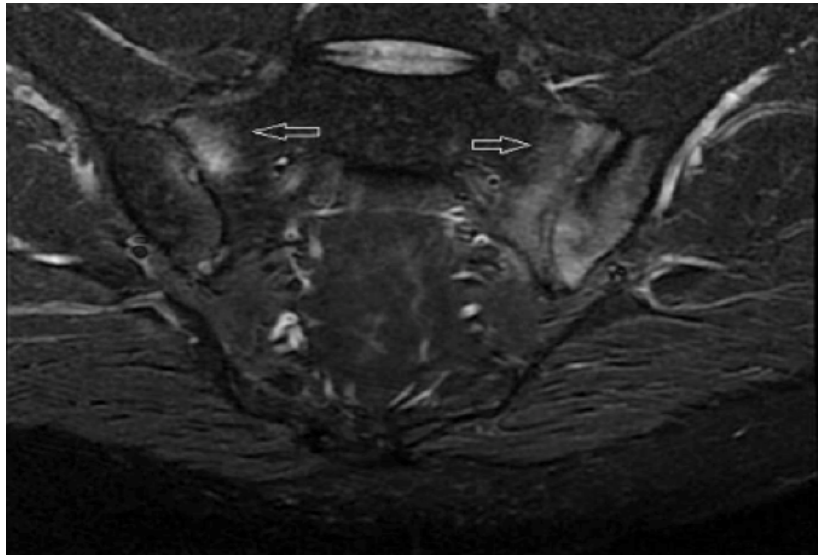
Osteitis Condensans Ilii



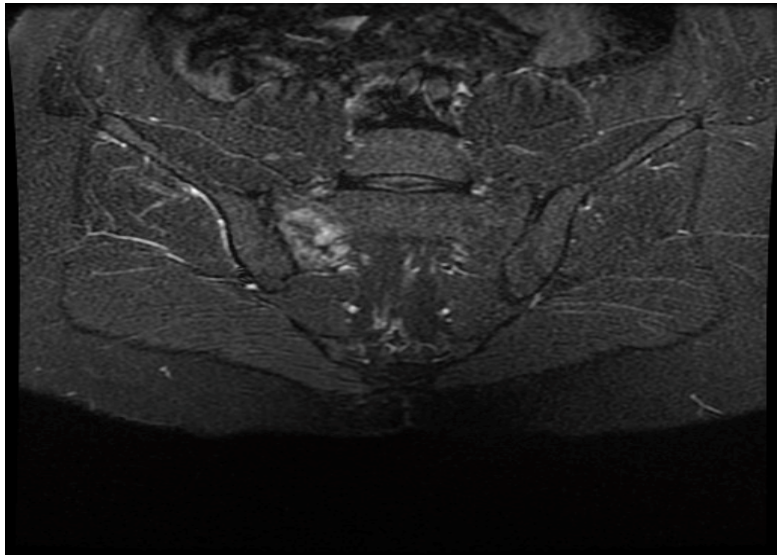
Sarcoidosis



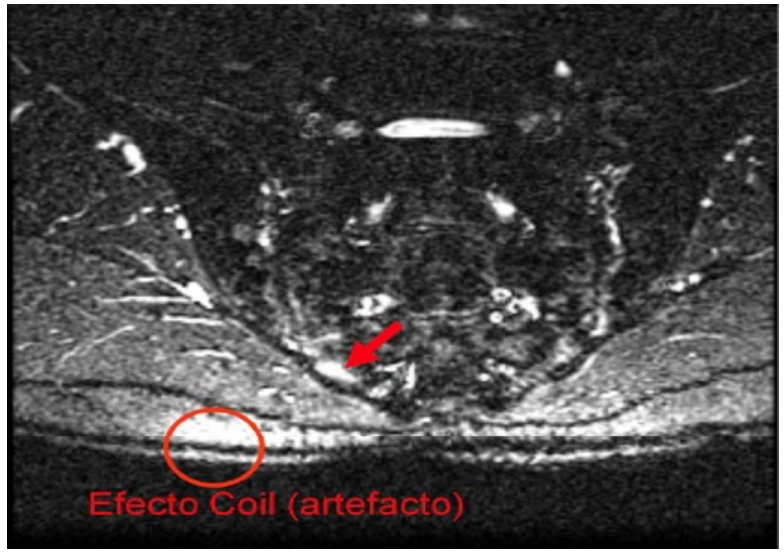
Brucellosis



Gout



Stress fracture



Artefact

Education and Training

Early Diagnosis

Accesibility to Rheumatologist

Accesibility to Diagnosis work-up tools

Increase Awareness

- Gastroenterologists
- Ophtalmologists
- Dermatologists

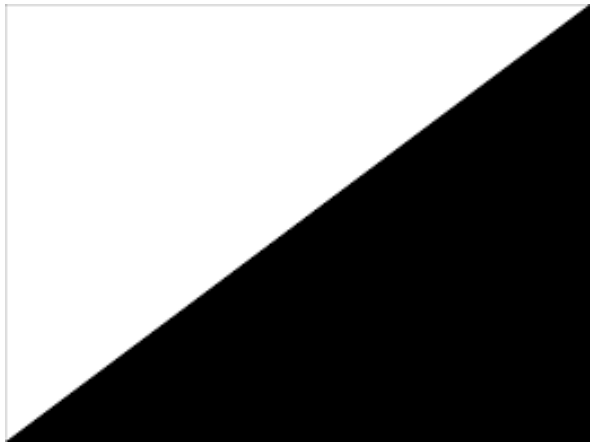
Accessibility to Rheumatology Department

- Other healthcare stakeholders

Accessibility to Imaging Improving Skills on Interpretation

"You see, Ms. Jenkins, by doubling up on patients in the MRI, we're able to cut costs in half, thereby passing the savings on to you."

Developing More Specific Tests



Conclusions

- AxSpA usually begins in the third decade of life, which is a very active period in occupational, social and economic spheres. As a consequence, axSpA is associated with a high burden of the disease.

- A timely diagnosis is a very relevant unmet need in axSpA. The earlier the diagnosis, the more challenging and uncertain can be.

- All, clinical history, complementary examinations and especially clinical reasoning should be considered.

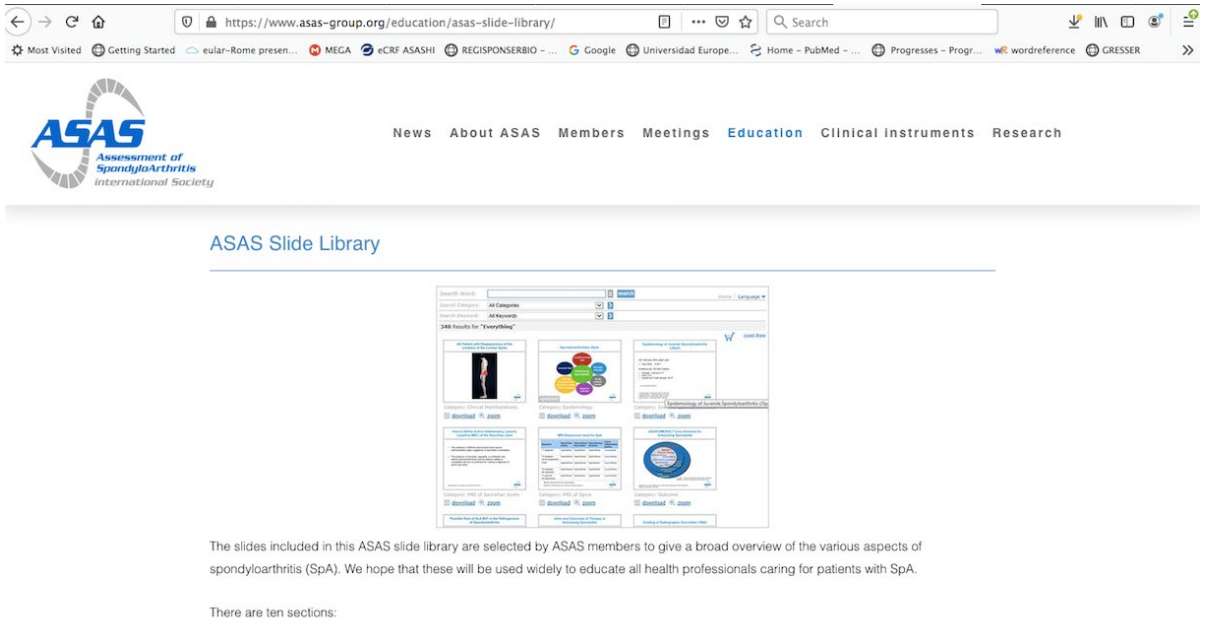
- Interpretation of imaging both xRay and MRI is an indispensable skill for diagnosis of axSpA.

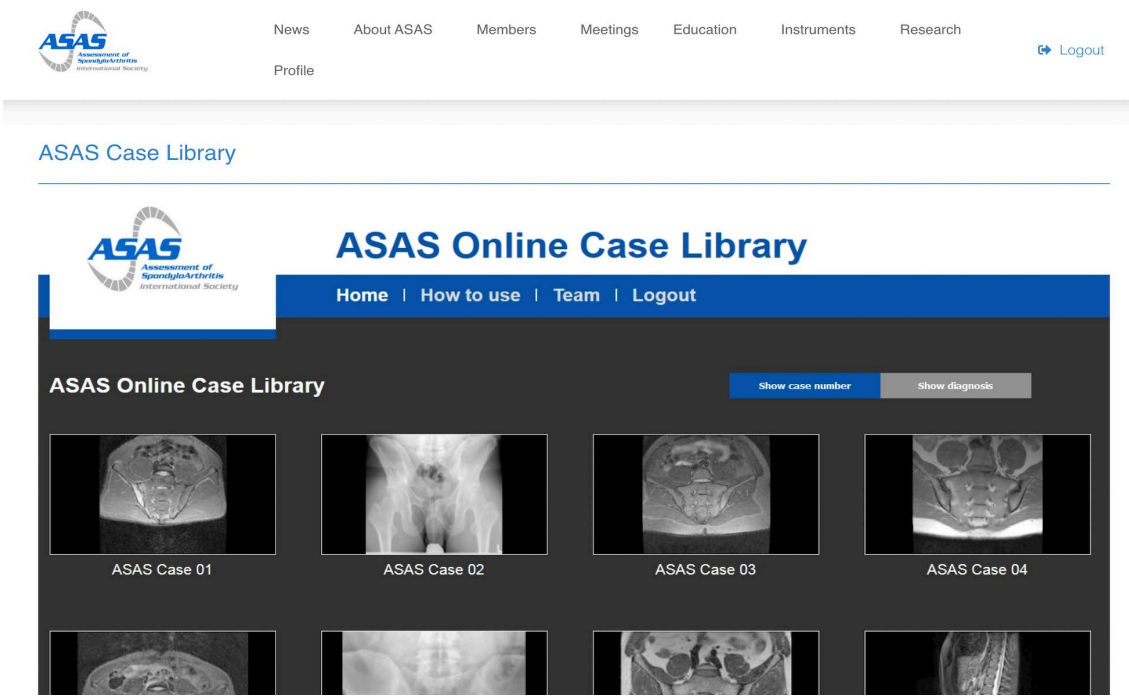
- Further strategies should be implemented to:
  - Increase awareness of the disease among general population and other health care providers
  - Educate rheumatologists and radiologists on the use and interpretation of imaging techniques

Resources

https://www.asas-group.org/education/asas-slide-library/

https://www.asas-group.org/education/asas-case-library/





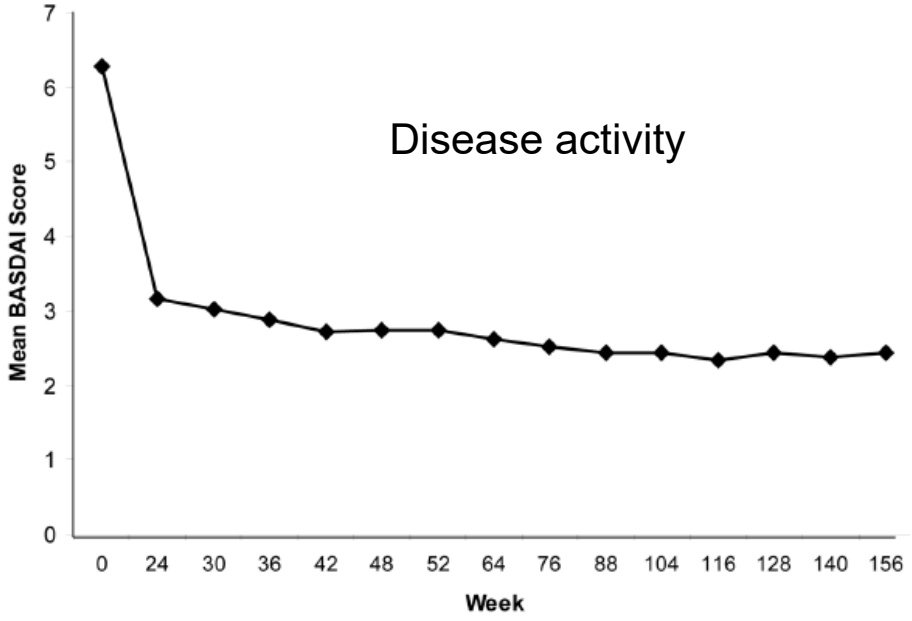
AxSpA: a patient-based approach to diagnosis and treatment, with a specific focus on gender and the elderly

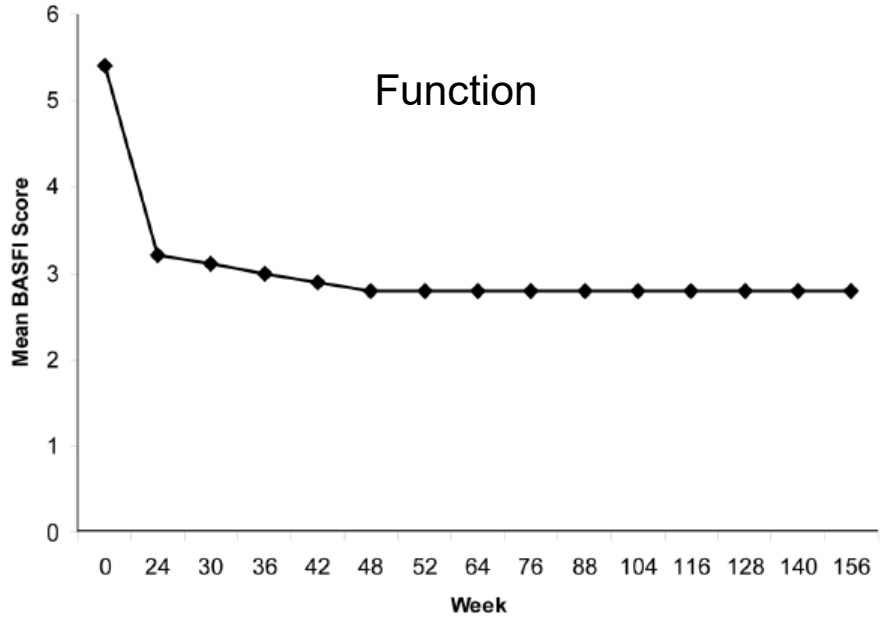
RHEUMAZENTRUM RUHRGEBIET

Xenofon Baraliakos
Rheumazentrum Ruhrgebiet Herne
Ruhr-University Bochum
Germany

RUHR UNIVERSITÄT BOCHUM RUB

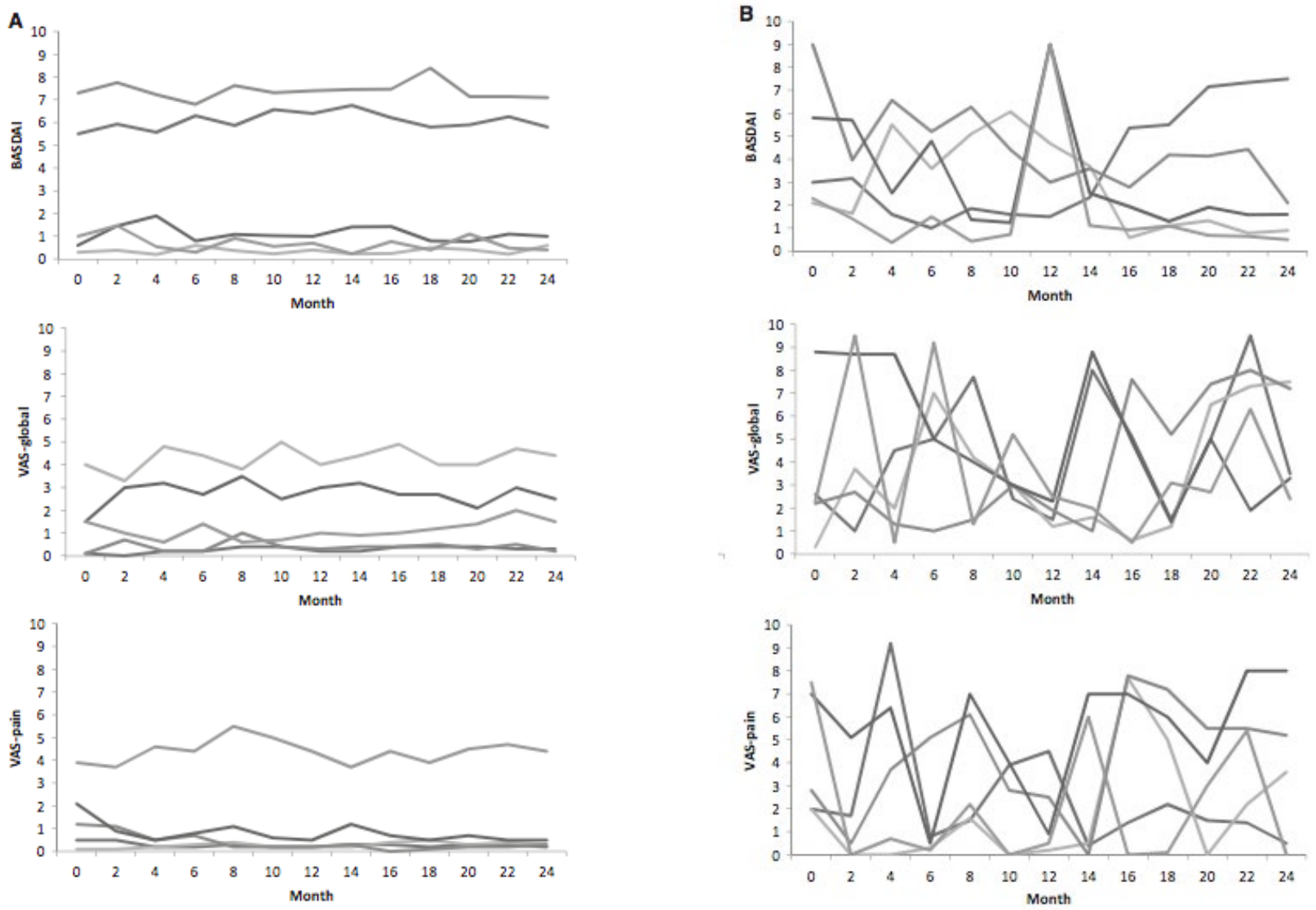
Measurement of treatment effect in axSpA: Are all patients the same?





Van der Heijde et al. Arthritis Res Ther 2009

High fluctuation of PROs in individual patients



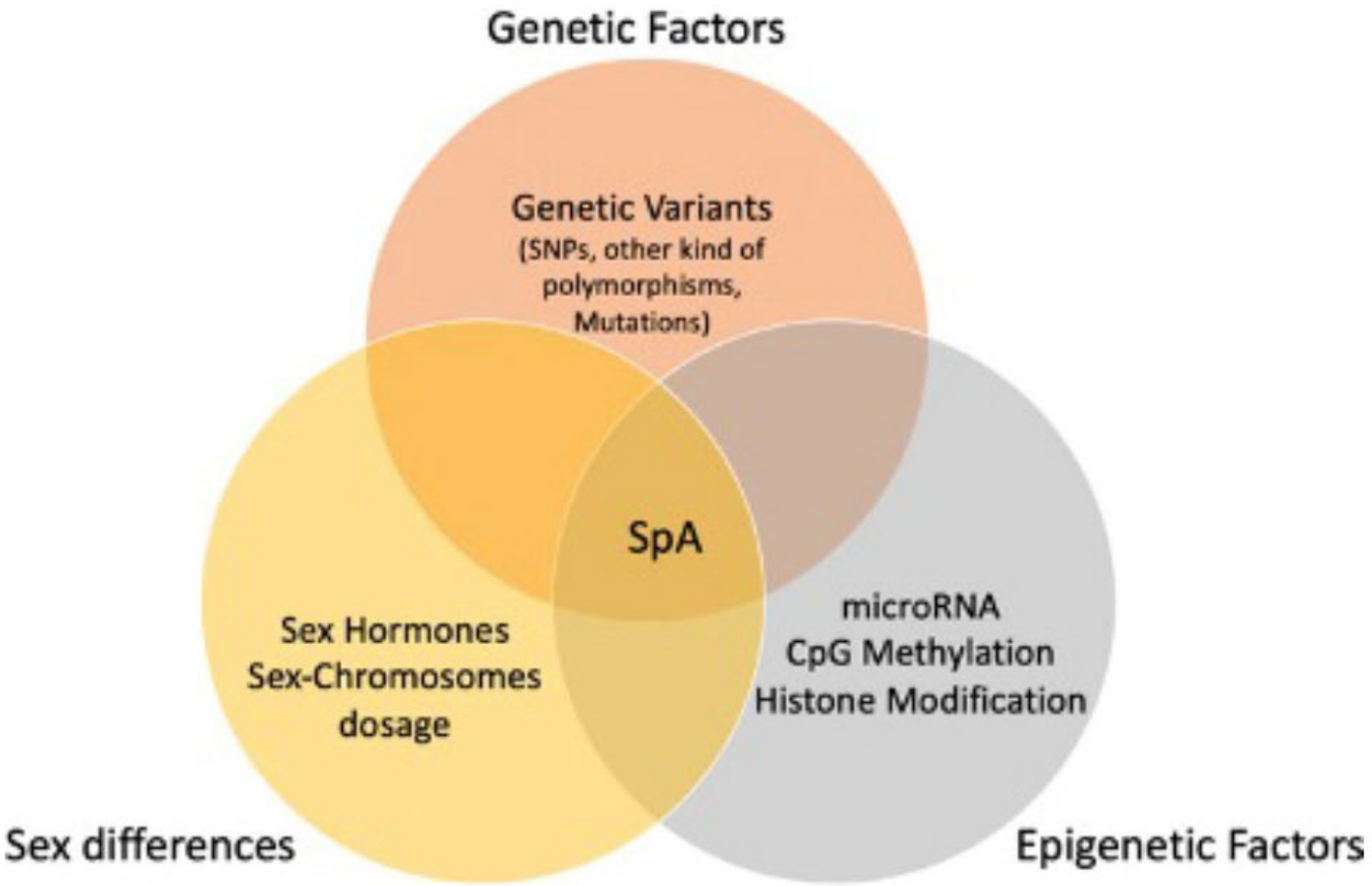
Essers I et al. Rheumatol 2016

What is associated with mobility impairment in AS: Inflammation or structural damage?

		Entire ankylosing spondylitis population (n=214)	Disease duration ≤3 years (n=53)	Disease duration >3 years (n=161)
X-ray score	mSASSS			
	B	0.865	0.380	0.924
	95% CI	0.677–1.054	−0.099 to 0.858	0.715–1.134
Correlation with BASMI	p Value	<0.001	0.117	<0.001
MRI Score	ASspiMRI-a			
	B	0.236	0.595	0.156
	95% CI	0.041–0.432	0.173–1.016	−0.070 to 0.383
Correlation with BASMI	p Value	0.018	0.007	0.174

Machado P et al, Ann Rheum Dis 2010

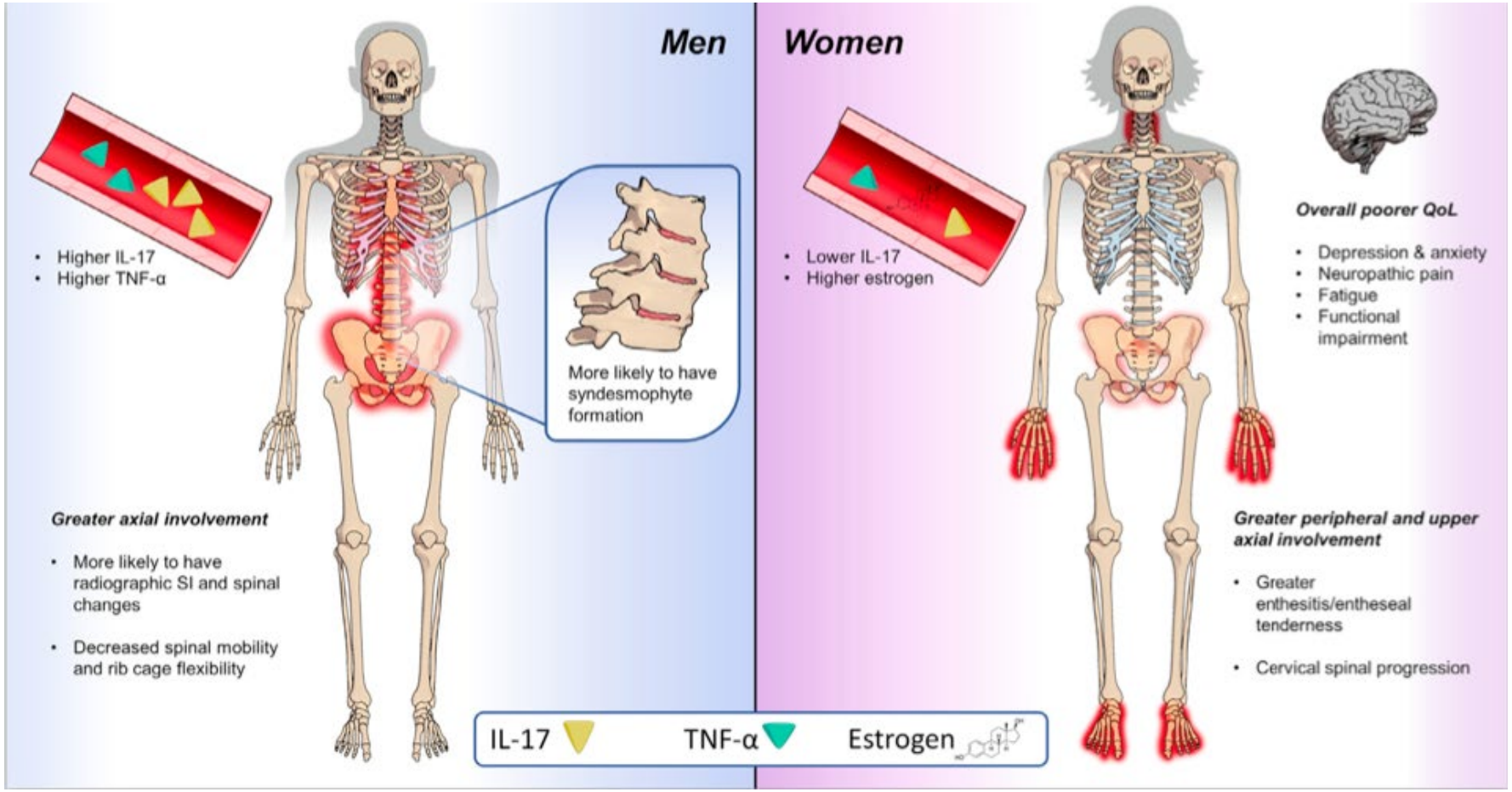
Interaction among genetic and epigenetic factors and sex in SpA



Chimenti MS et al, Front Genetics 2021

Differences in axSpA based on sex

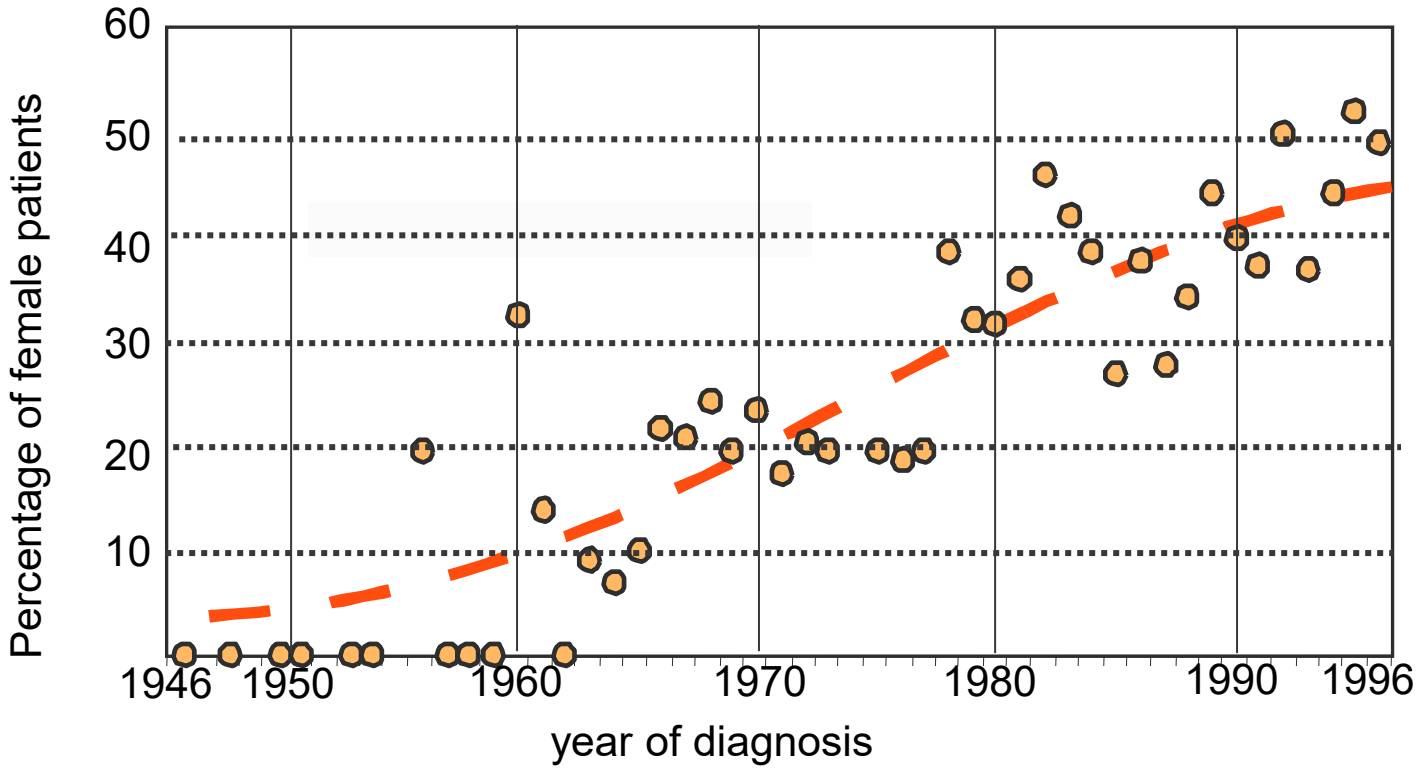
Axial involvement
Radiographic progression
Treatment with bDMARDs



Disease activity
Fatigue
Peripheral involvement
Functional impairment
Enthesitis
Tender points

Wright G et al, Semin Arthr Rheum 2020

Percentage of Female AS Patients is Dependent on Year of Diagnosis

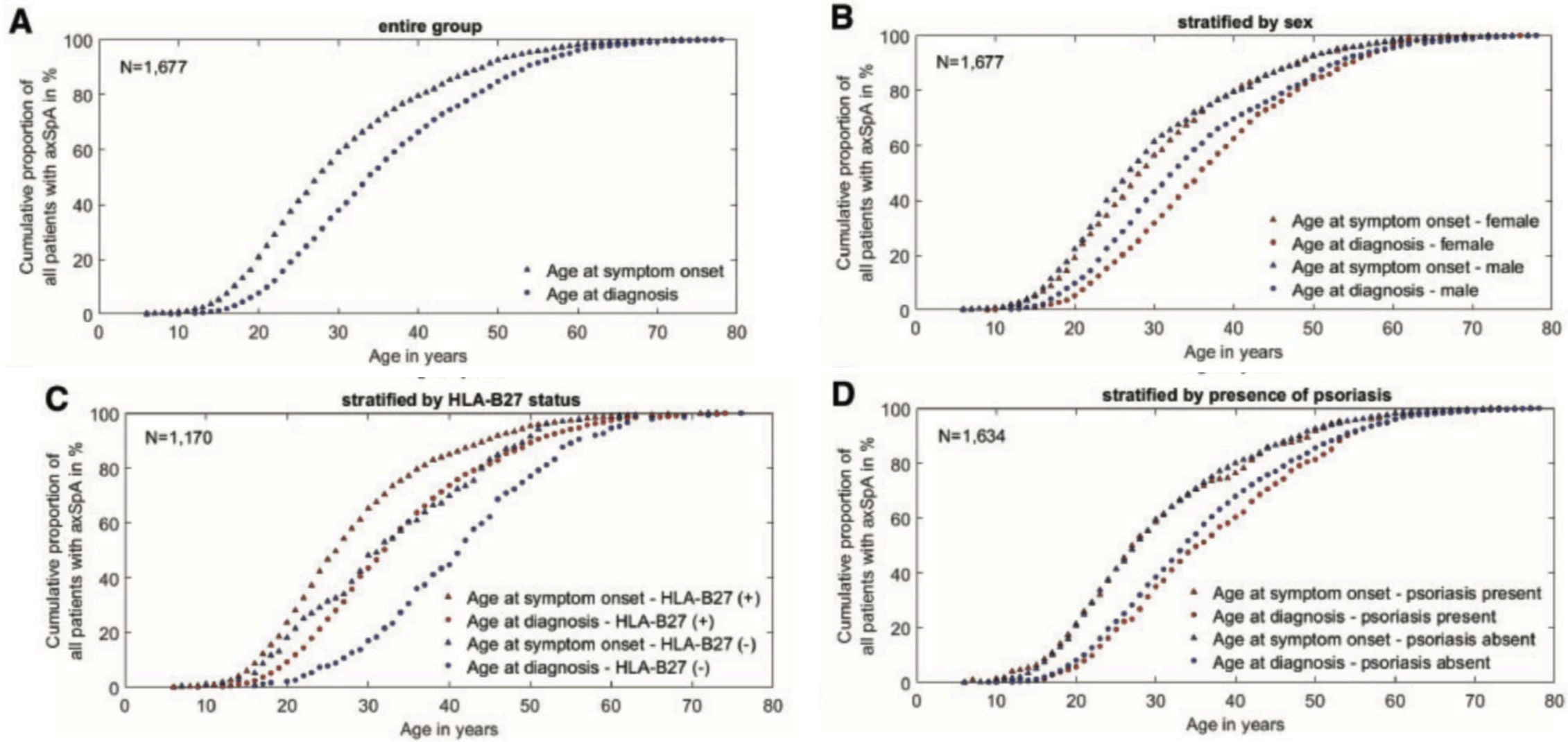


Over time, the gender ratio approached 1:1.

Feldtkeller E. Aktuelle Rheumatologie 1998;23:176–81
Feldtkeller E et al. Curr Opin Rheumatol 2000;12:239-47

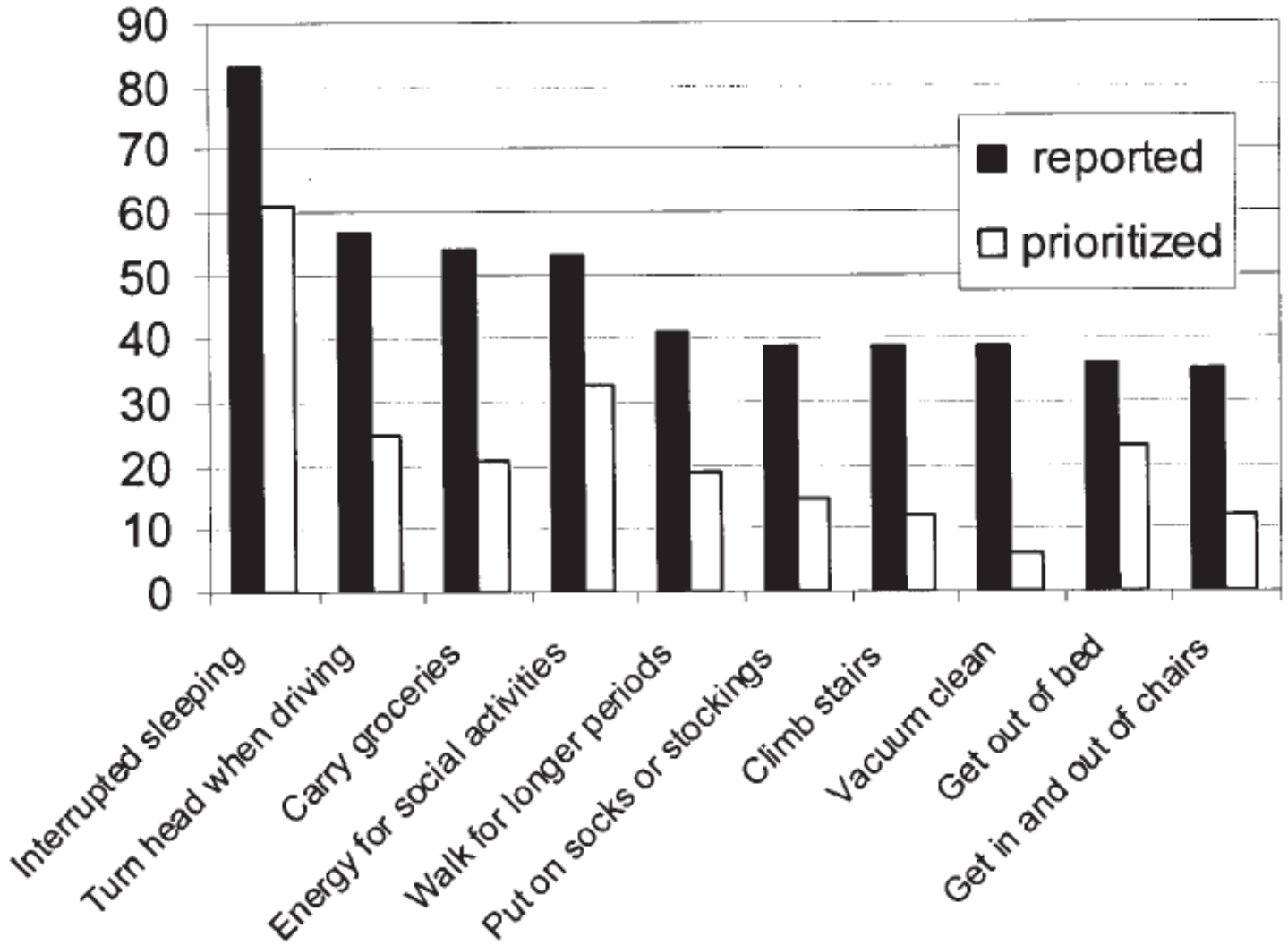
Determinants of diagnostic delay in axial spondyloarthritis:

an analysis based on linked claims and patient-reported survey data



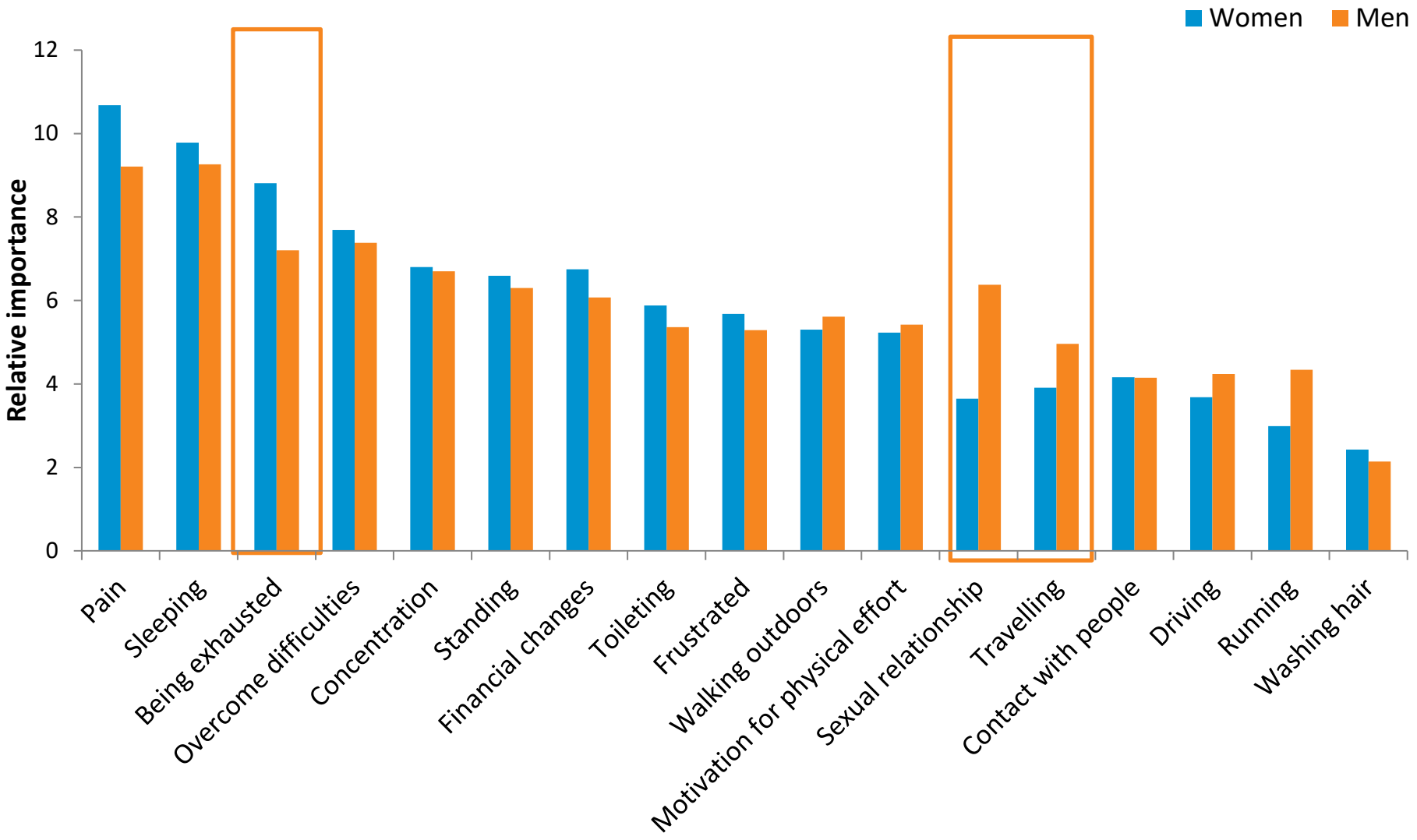
Redeker I et al, Rheumatology 2018

Impairment of ‘function’ in axSpA



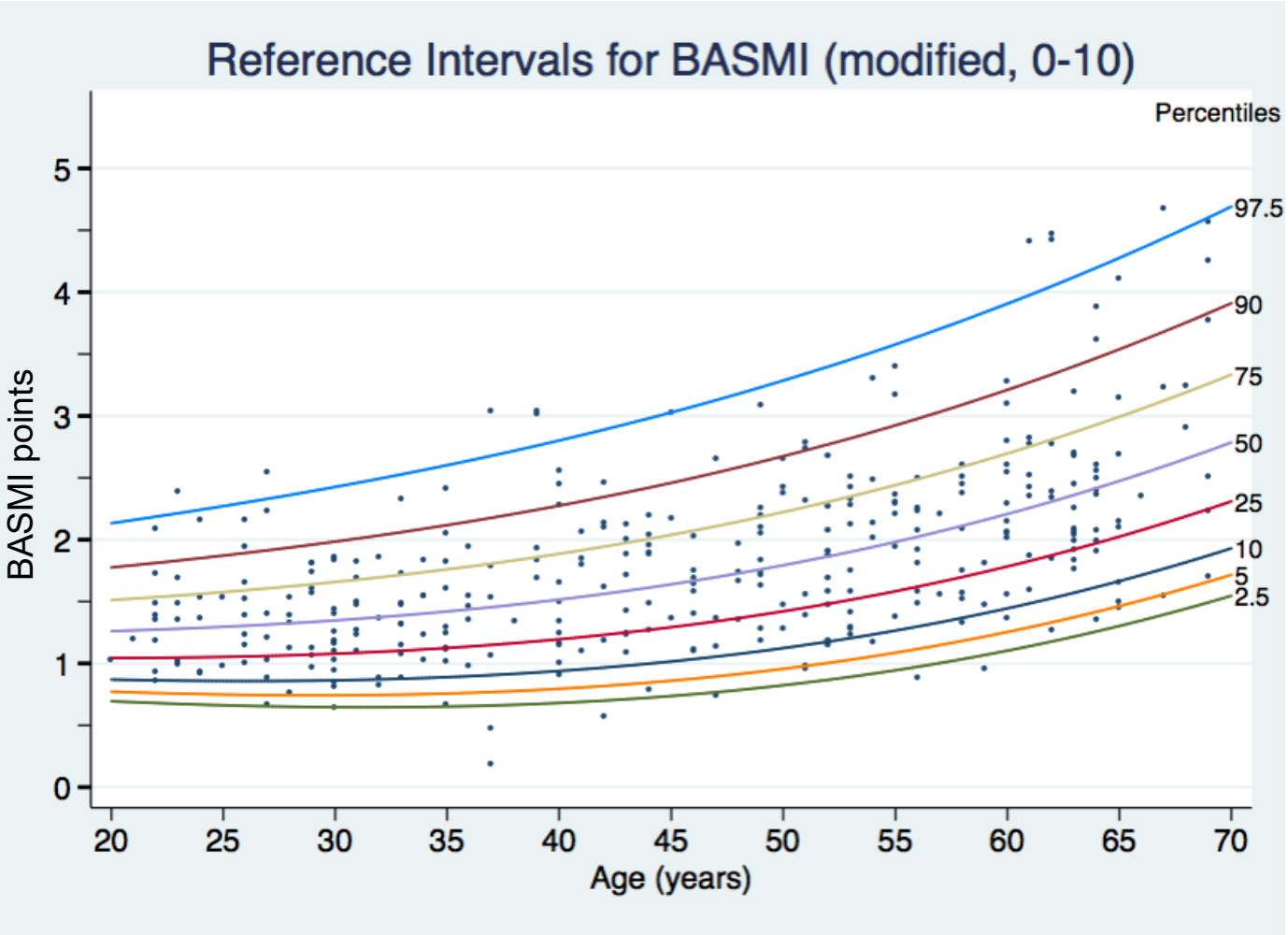
Dagfinrud et al, J Rheum 2005

Impairment of ‘functioning’ in axSpA



Kiltz et al. Rheumatol 2016

Percentile Curves for BASMI in Relation to Age



More mobility curves in: ASAS website / Clinical instruments / Mobility curves

Ramiro S et al. Ann Rheum Dis 2015;74:1218-24 (with permission)

Gender differences on disease activity patterns and status

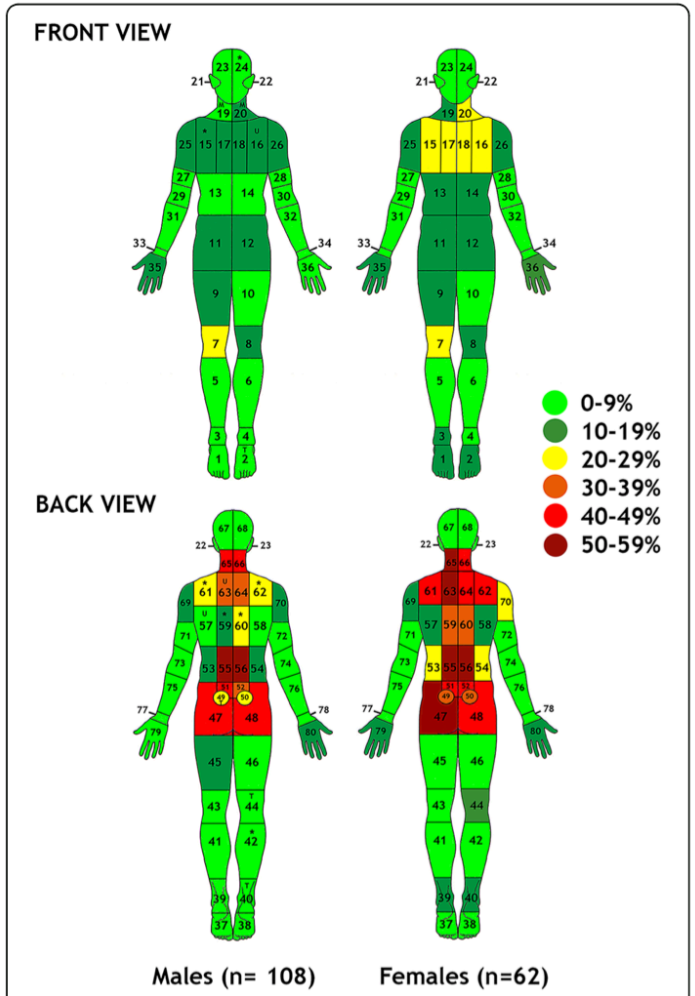
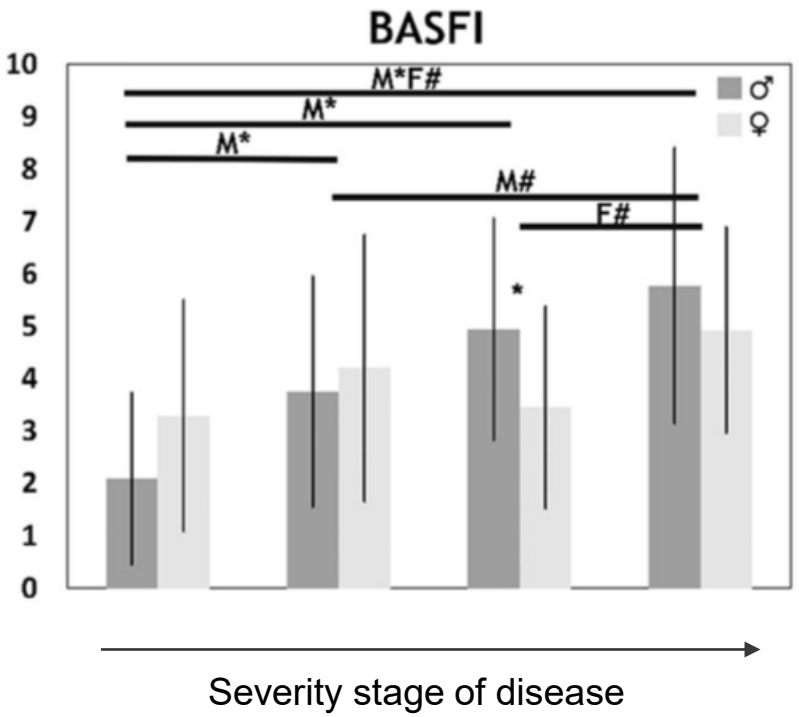
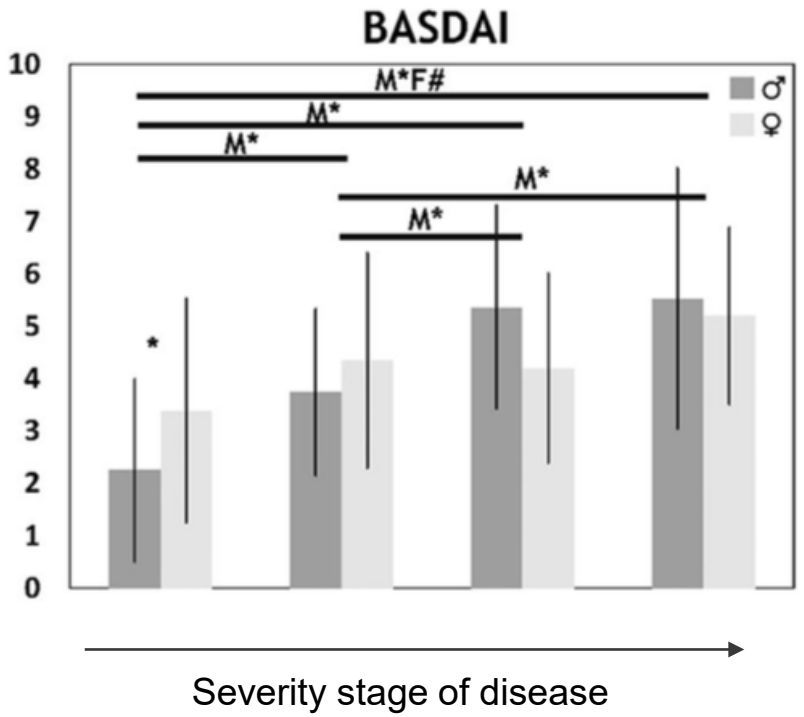


Fig. 1 Graphical illustration of pain locations displayed as prevalence estimates for the total group and by gender in patients with axial spondyloarthritis ($n = 170$). * $p < .05$ in both univariate chi-square and multivariate logistical regression analyses; ^{U} $p < .05$ only in univariate analysis; ^{M} $p < .05$ only multivariate analysis; ^{T} $p < .05$ in univariate but trend in multivariate analysis





Swinnen et al. Arthr Res Ther 2018

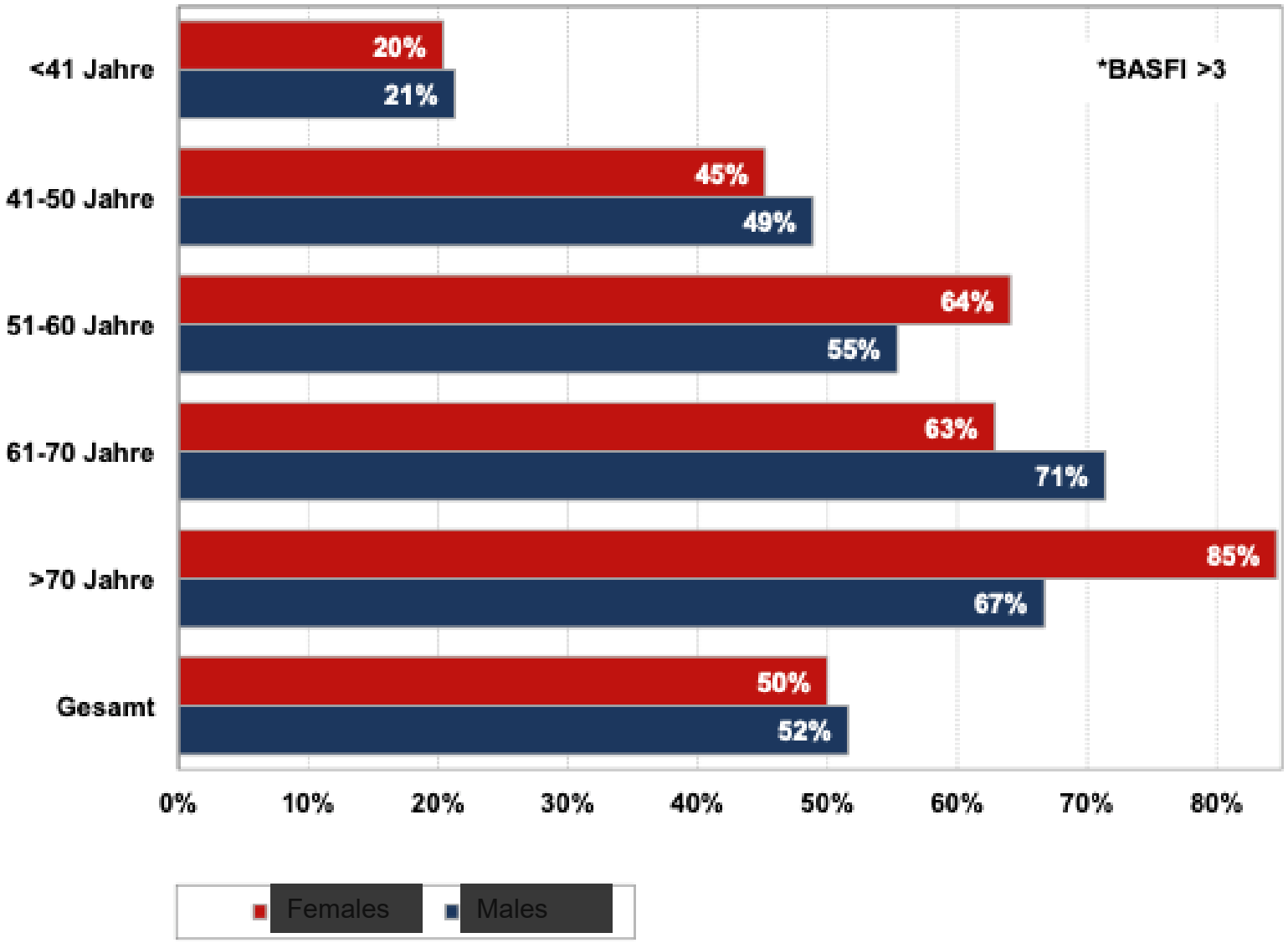
EULAR 2021: OP0051 LOOKING BEYOND BASDAI TOTAL SCORES: ANALYSIS OF THE BASDAI ON THE BASIS OF SEX

Maguire S. *et al.*, Dublin, Irland

	Females	Males	*p value*
Number	24.9% (213)	75.1% (644)	
Age	43.8	46.5	***0.05***
Delay to dx	7.43	8.18	*0.26*
Disease duration	17.9	19.8	*0.06*
Radiographic sacroiliitis	73.7% (157)	80.1% (516)	***0.02***
MRI Sacroiliitis	46% (98)	43.8% (282)	***0.04***
HLA-B27+	89.7% (148)	89.9% (438)	*0.86*
BASDAI	4.6	3.83	***<0.01***
1 -fatigue	5.56	4.51	***<0.01***
2 -spinal pain	5.51	4.63	***<0.01***
3 -other pain	3.82	3.19	***0.01***
4 -discomfort	4.05	3.29	***<0.01***
5 -EMS	4.55	3.94	***0.01***
6 -EMS duration	3.54	3.12	*0.07*
BASMI	3.51	4.16	***<0.01***
BASFI	3.89	3.63	*0.26*
HAQ	0.6	0.51	***0.03***
ASQoL	7.62	6.12	***<0.01***

	Females	Males
Most Severe	Fatigue	Spinal Pain
	Spinal Pain	Fatigue
	EMS	EMS
	Discomfort	Discomfort
	Other Pain	Other Pain
Least Severe	EMS Duration	EMS Duration

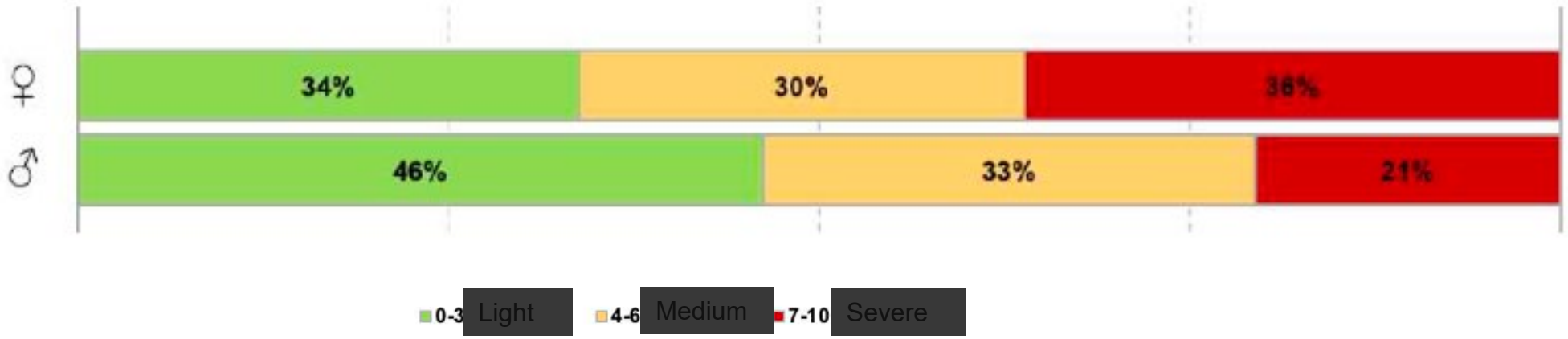
AS patients with decreased functional impairment



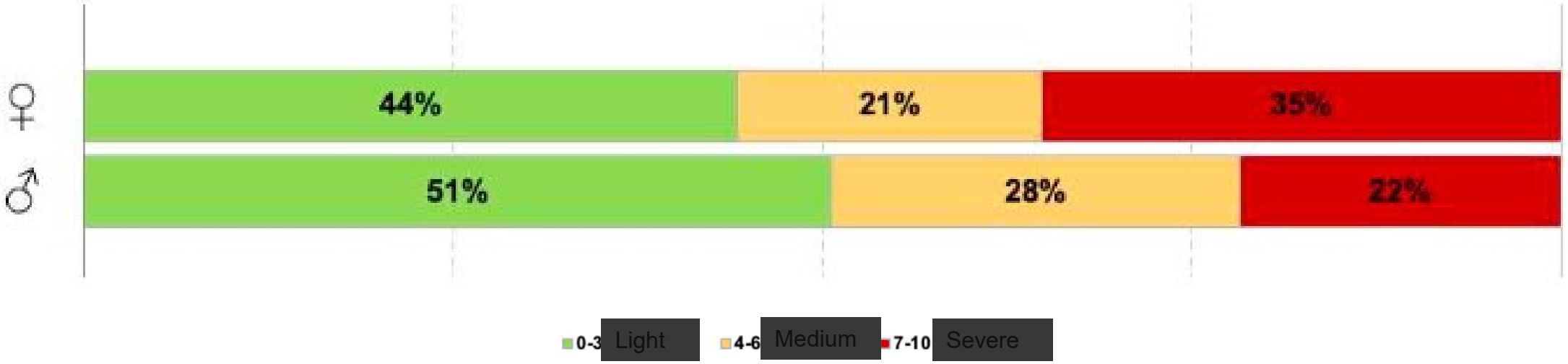
At age of 51-60y and >70y, females have a more severe functional impairment as compared to males

DRFZ

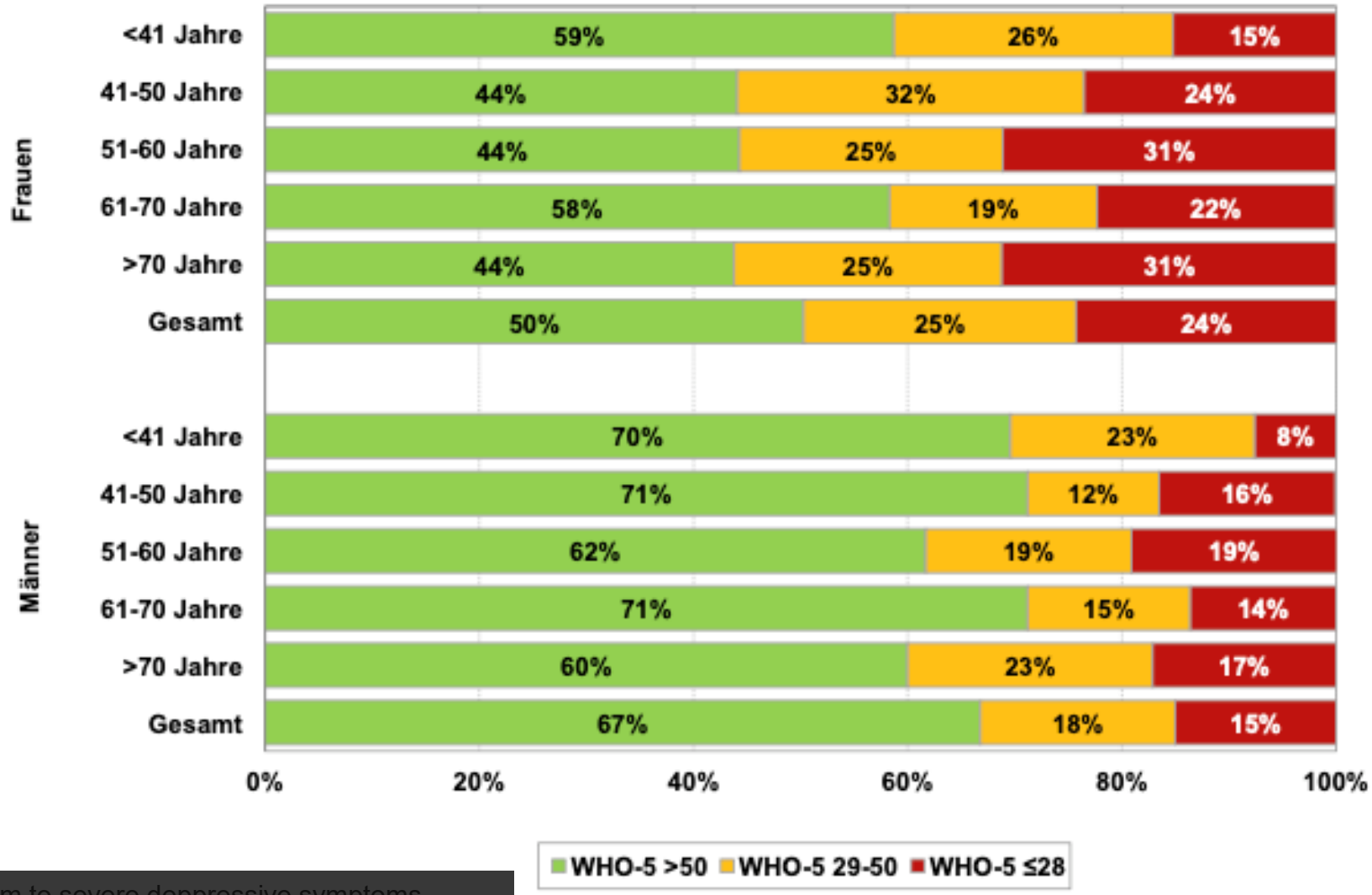
Distribution of fatigue among AS patients



Sleep disturbance among AS patients



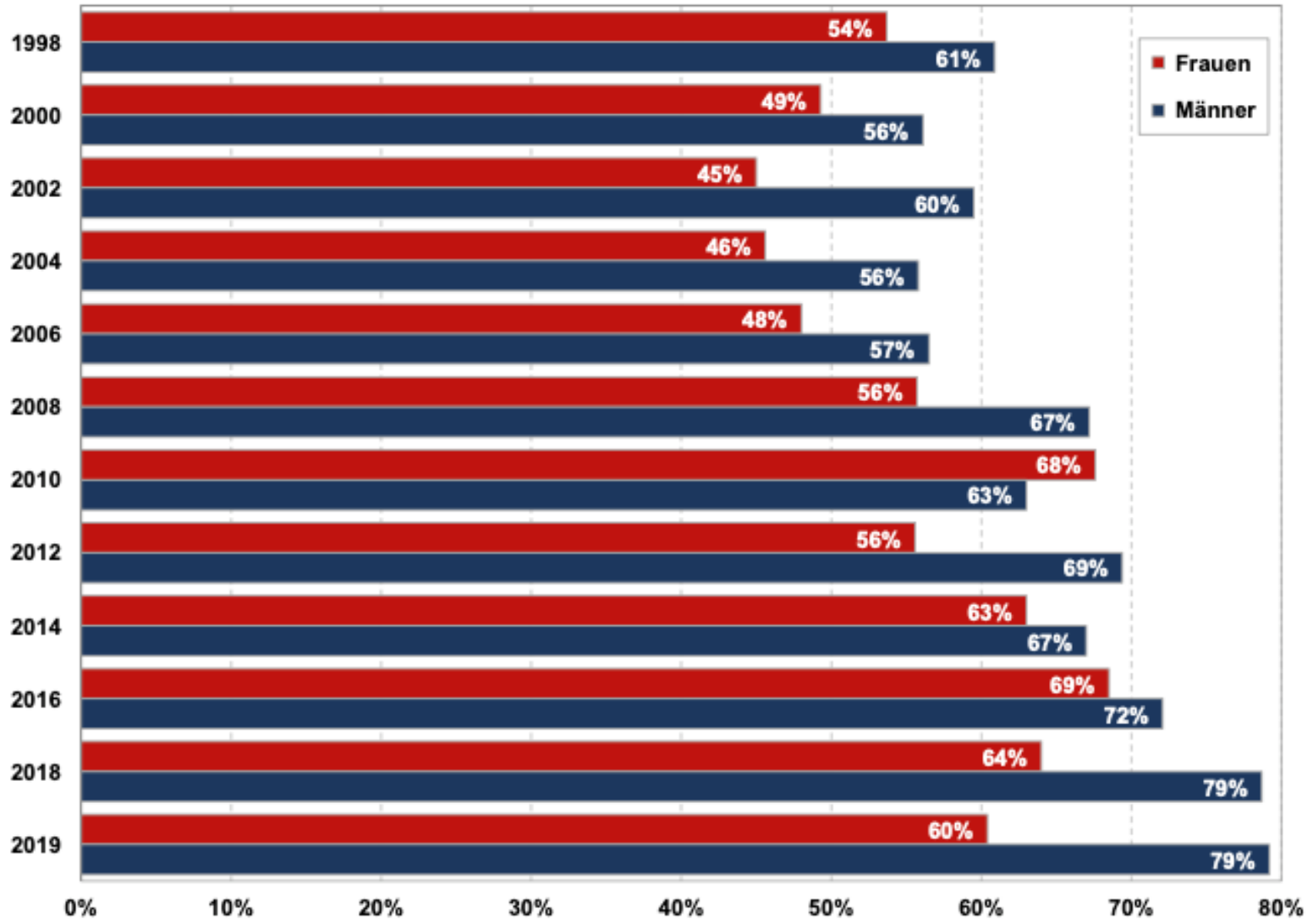
WHO-5-Score among AS patients



WHO-5 ≤28: Medium to severe deppressive symptoms
WHO-5 29-50: Mild deppressive symptoms
WHO-5 >50: No deppressive symptoms

DRFZ

Proportion of working AS patients at age < 65years



The proportion of working male AS patients has increased significantly in the last 20 years

DRFZ

Results also dependent on geographic region and 'early' diagnosis

COREVITAS

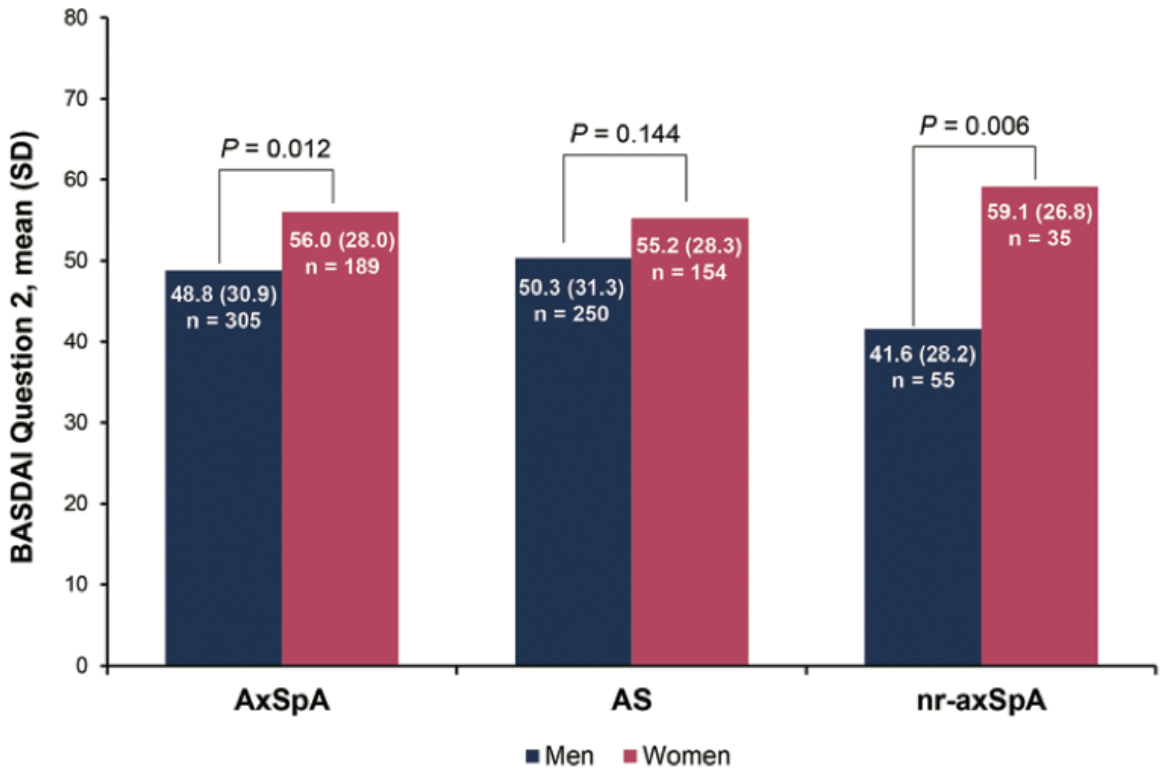


Figure 1. Patient-reported severity of inflammatory neck, back, or hip pain in men and women with axSpA. Results are mean (SD) of BASDAI Question 2: "How would you describe the overall level of inflammatory neck, back, or hip pain you have had?" Severity is rated on a scale of 0 (none) to 10 (very severe). *P* values were calculated using Wilcoxon rank-sum tests. AS: ankylosing spondyloarthritis; axSpA: axial spondyloarthritis; BASDAI: Bath Ankylosing Spondylitis Disease Activity Index; nr-axSpA: nonradiographic axial spondyloarthritis.

Mease P et al, J Rheum 2021

SPACE

Table 2 Characteristics of patients without ($n = 418$) and with ($n = 301$) certain diagnosis of axSpA stratified by gender

	No axSpA		*p* value	axSpA		*p* value
	Male ($N = 129$)	Female ($N = 289$)		Male ($N = 146$)	Female ($N = 155$)	
Age at CBP onset (years), mean (SD)	29.3 (8.6)	29.4 (8.2)	0.9	**27.4 (7.5)**	**29.5 (7.8)**	**0.02**
Duration of CBP (months), mean (SD)	12.8 (6.9)	13.4 (7.0)	0.5	13.3 (7.1)	13.4 (7.0)	0.5
Alternating buttock pain, *n* (%) ($N = 454$[a])	**23 (43)**	**100 (59)**	**0.03**	65 (60)	64 (51)	0.2
IBP, *n* (%)	83 (57)	164 (64)	0.2	123 (84)	129 (84)	1.0
Response to NSAIDs, *n* (%)	45 (37)	81 (29)	0.1	92 (64)	98 (66)	0.8
Family history of SpA, *n* (%)	44 (34)	124 (44)	0.1	68 (46)	69 (45)	0.8
Peripheral arthritis, *n* (%)	15 (12)	25 (9)	0.3	37 (25)	34 (22)	0.5
Heel enthesitis, *n* (%)	17 (13)	28 (10)	0.3	46 (31)	51 (33)	0.7
Dactylitis, *n* (%)	3 (2)	4 (1)	0.5	16 (11)	16 (10)	0.9
Uveitis, *n* (%)	7 (5)	12 (4)	0.6	19 (13)	20 (13)	1.0
Psoriasis, *n* (%)	6 (5)	23 (8)	0.2	22 (15)	37 (24)	0.051
IBD, *n* (%)	11 (8)	15 (5)	0.2	10 (7)	12 (8)	0.8
HLA-B27$^+$, *n* (%)	**43 (34)**	**66 (23)**	**0.02**	**114 (80)**	**92 (60)**	**< 0.001**
Elevated CRP/ESR, *n* (%)	21 (16)	61 (21)	0.2	71 (49)	64 (42)	0.2
SpA features without imaging or HLA-B27, mean (SD)	2.4 (0.1)	2.1 (0.1)	0.3	3.5 (1.7)	3.5 (1.6)	1.0
MRI-SIJ$^+$/X-SIJ$^-$, *n* (%)	7 (5)	19 (6)	0.6	65 (44)	68 (44)	0.9
MRI-SIJ$^-$/X-SIJ$^+$, *n* (%)	2 (1)	4 (1)	0.9	5 (3)	5 (3)	0.9
MRI-SIJ$^+$/X-SIJ$^+$, *n* (%)	**5 (4)**	**0 (0)**	**0.01**	**44 (30)**	**26 (17)**	**0.006**
Any positive imaging,[b] *n* (%)	14 (10)	23 (7)	0.3	**114 (78)**	**99 (64)**	**0.007**
Number of syndesmophytes, mean (SD) ($N = 182$[a])	n/a	n/a	–	0.1 (0.4)	0.0 (0.1)	0.5
Patients with syndesmophytes, *n* (%) ($N = 182$[a])	n/a	n/a	–	**7/83 (8)**	**1/99 (1)**	**0.02**
Current smokers, *n* (%)	33 (28)	54 (19)	**0.1**	**31 (22)**	**15 (10)**	**0.02**

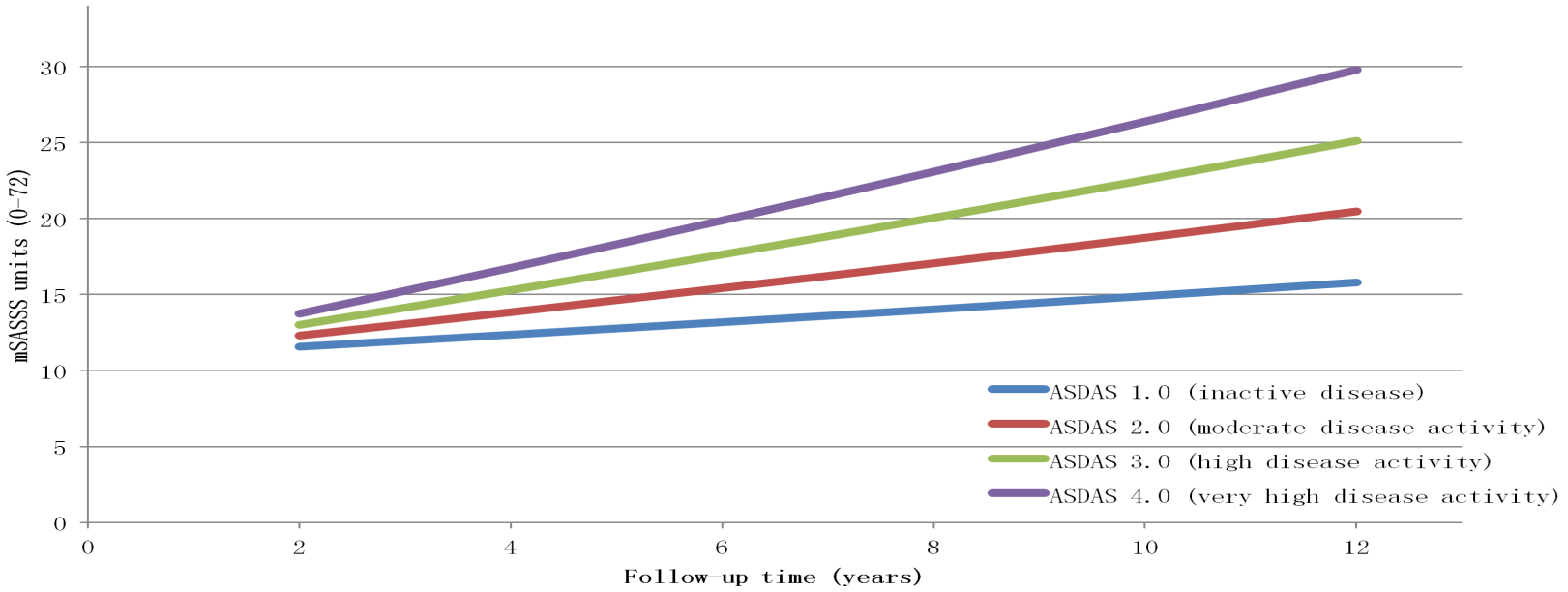
Modified Stoke ankylosing spondylitis Spine Score available for 182/301 axSpA patients. Bold data indicate significant results
axSpA axial spondyloarthritis, *CBP* chronic back pain, *IBP* inflammatory back pain, *NSAID* non-steroidal anti-inflammatory drug, *SpA* spondyloarthritis, *IBD* inflammatory bowel disease, *HLA* human leukocyte antigen, *CRP* C-reactive protein, *ESR* erythrocyte sedimentation rate, *MRI-SIJ* magnetic resonance imaging of sacroiliac joints, *X-SIJ* plain radiograph of of sacroiliac joints
[a]Missing data < 5% unless otherwise indicated
[b]MRI-SIJ $^+$ and/or X-SIJ$^+$

Ortolan A et al, Arth Res Ther 2018

Personalised medicine: does this apply to axSpA?

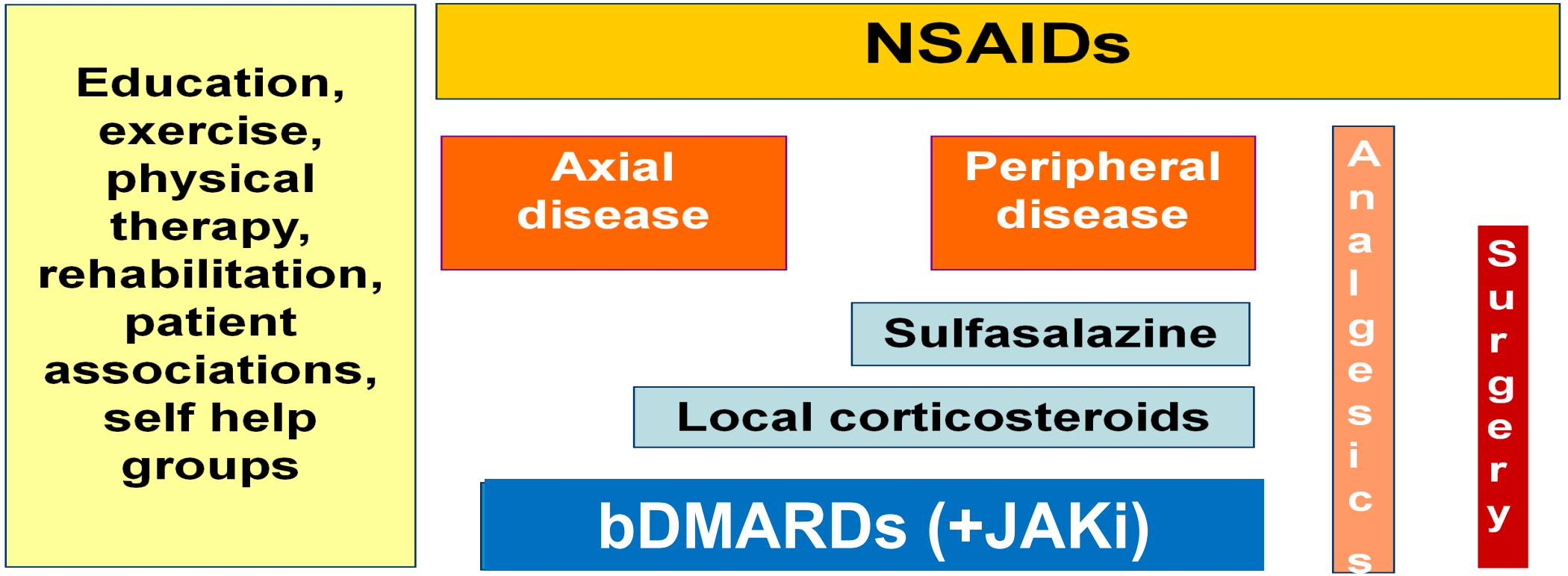
Longitudinal Relationship between Disease Activity and Radiographic Damage

Longitudinal relationship between ASDAS and mSASSS



Ramiro S et al. Ann Rheum Dis 2014;73:1455-61 (with permission)

ASAS/EULAR recommendations for the management of axial Spondyloarthritis



Ramiro S et al, EULAR 2022

Different treatment outcomes based on assessment

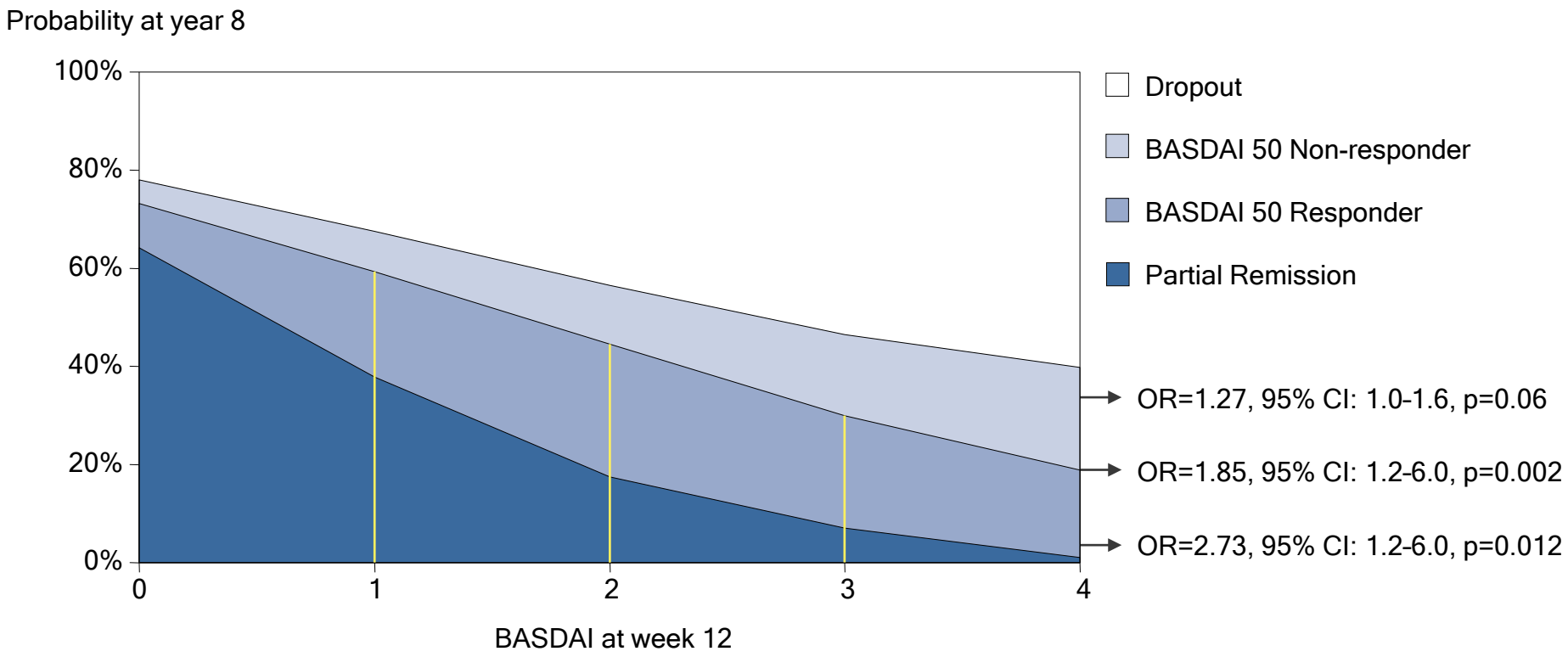
TABLE 2 Outcome parameters after 1 and 4 weeks of continuous NSAID treatment in both axSpA subgroups

Outcome parameter	1 week after baseline			4 weeks after baseline		
	nr-axSpA ($n=50$)	AS ($n=50$)	axSpA ($n=100$)	nr-axSpA ($n=50$)	AS ($n=50$)	axSpA ($n=100$)
Mean BASDAI, mean (S.D.)	4.2 (2.2)	3.9 (2.1)	4.0 (2.1)	3.9 (2.3)	3.6 (1.8)	3.8 (2.1)
Mean BASFI, mean (S.D.)	3.4 (1.9)	3.4 (2.1)	3.4 (2.0)	3.2 (2.3)	3.3 (2.2)	3.3 (2.3)
Mean ASDAS, mean (S.D.)	1.8 (0.8)	1.9 (0.9)	1.9 (0.8)	1.7 (0.8)	1.7 (0.7)	1.7 (0.8)
BASDAI <3, % patients	30	40	35	36	44	40
ASDAS <1.3, % patients	30	26	28	36	32	34
ASAS PR, % patients	8	12	10	14	18	16
BASDAI ⩾4, % patients	48	50	49	46	42	44
ASDAS-CRP ⩾2.1, % patients	32	42	37	34	32	33
ASDAS clinically important improvement, % patients	26	24	25	32	34	33
ASAS40 response, % patients	24	24	24	30	40	35
BASDAI 50% patients response, % patients	30	36	33	36	40	38

There were no statistical differences in the improvement rates between the axSpA subgroups in any of the assessed outcomes (all $P > 0.05$). PR: partial remission.

Baraliakos X et al, Rheumatology 2016

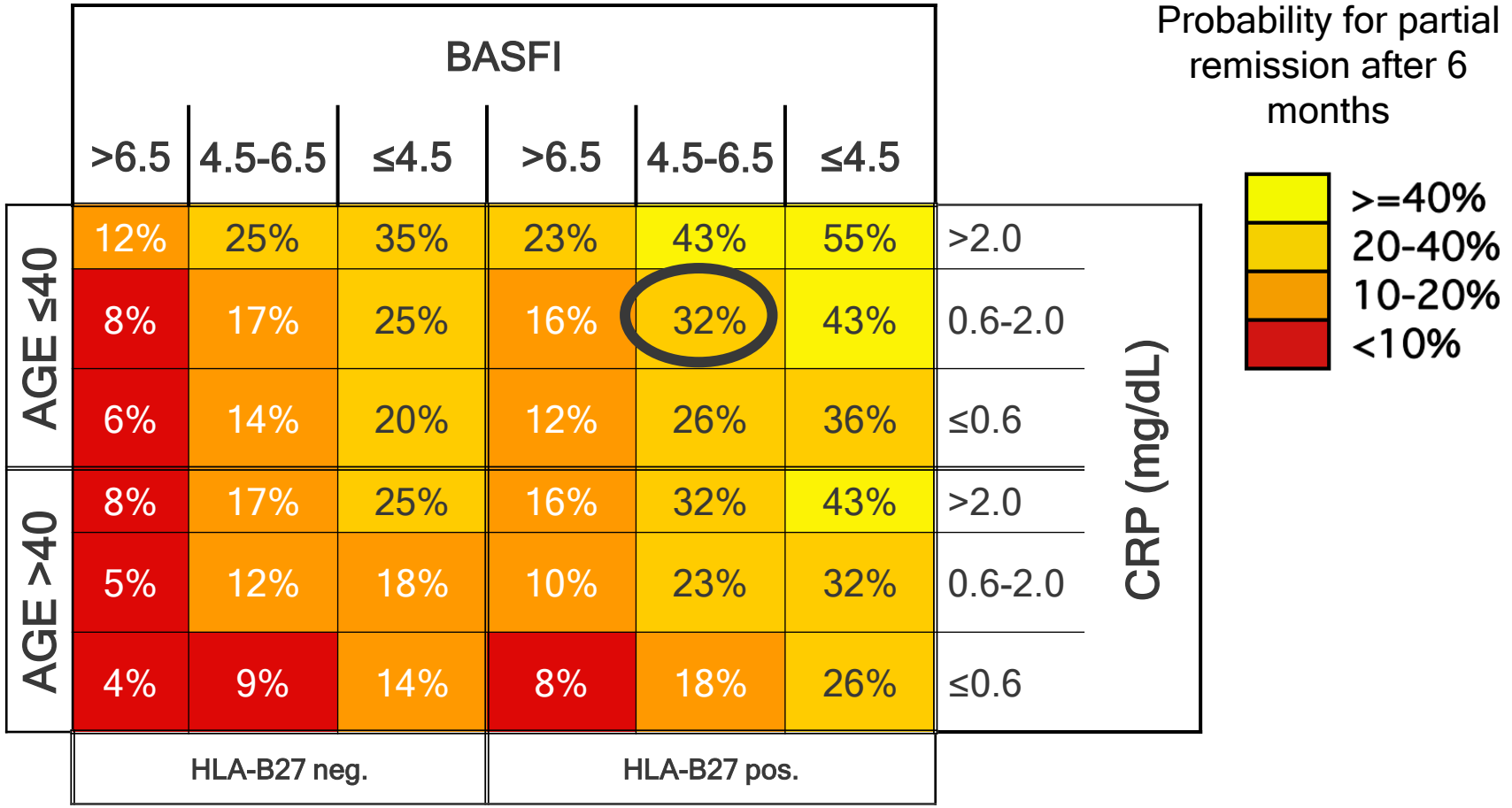
Treatment of axSpA with anti-TNF: early response leads to better treatment outcomes



Baraliakos X et al. Rheumatology 2011

Treatment of axSpA: prediction of remission

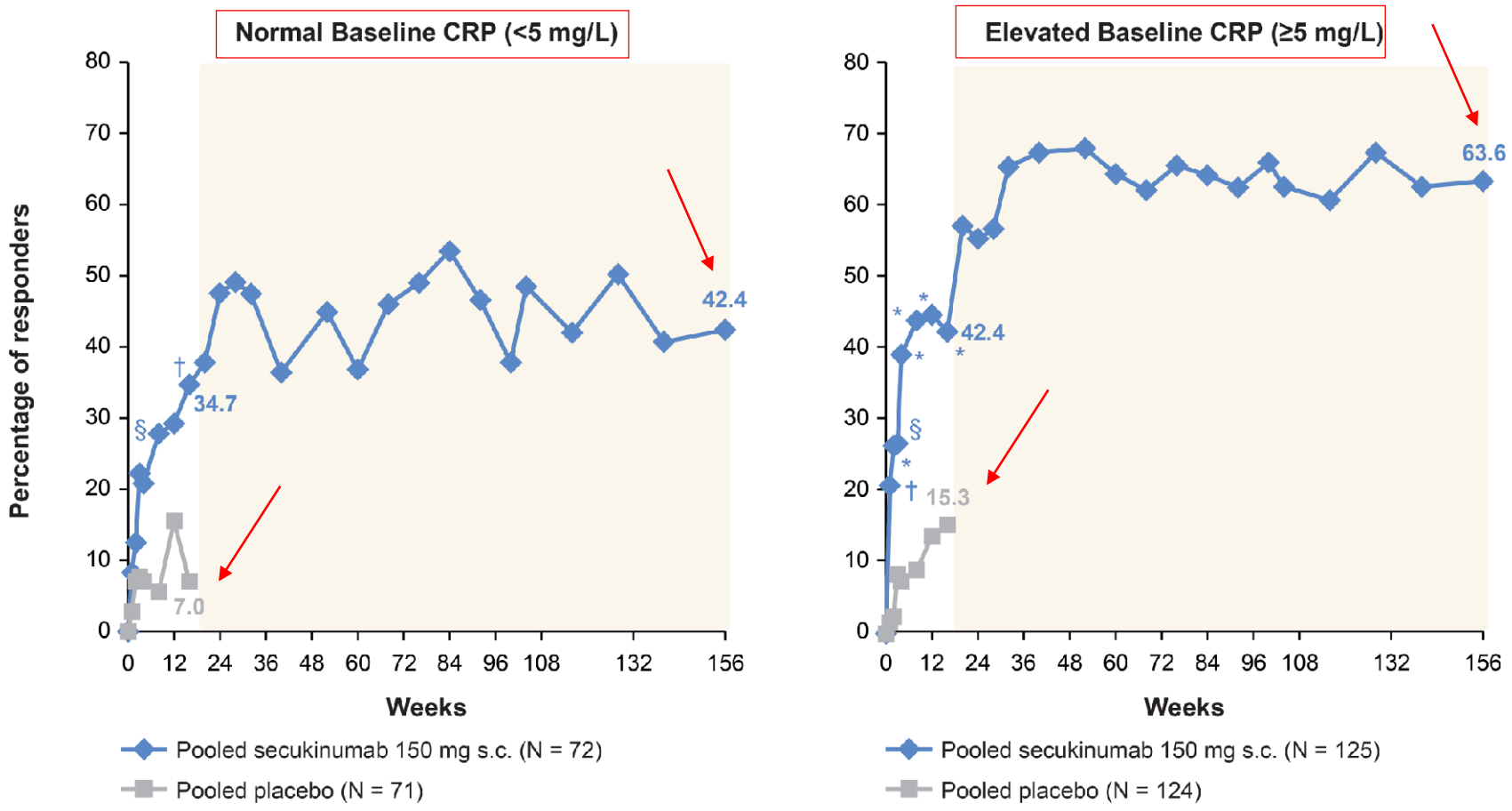
Patient 2: 42 years, CRP 2.7, HLA-B27-, BASFI 7.0



Vastesaeger N et al, Ann Rheum Dis 2010

Improvement of disease activity under bDMARDs
- Related to CRP?

ASAS 40

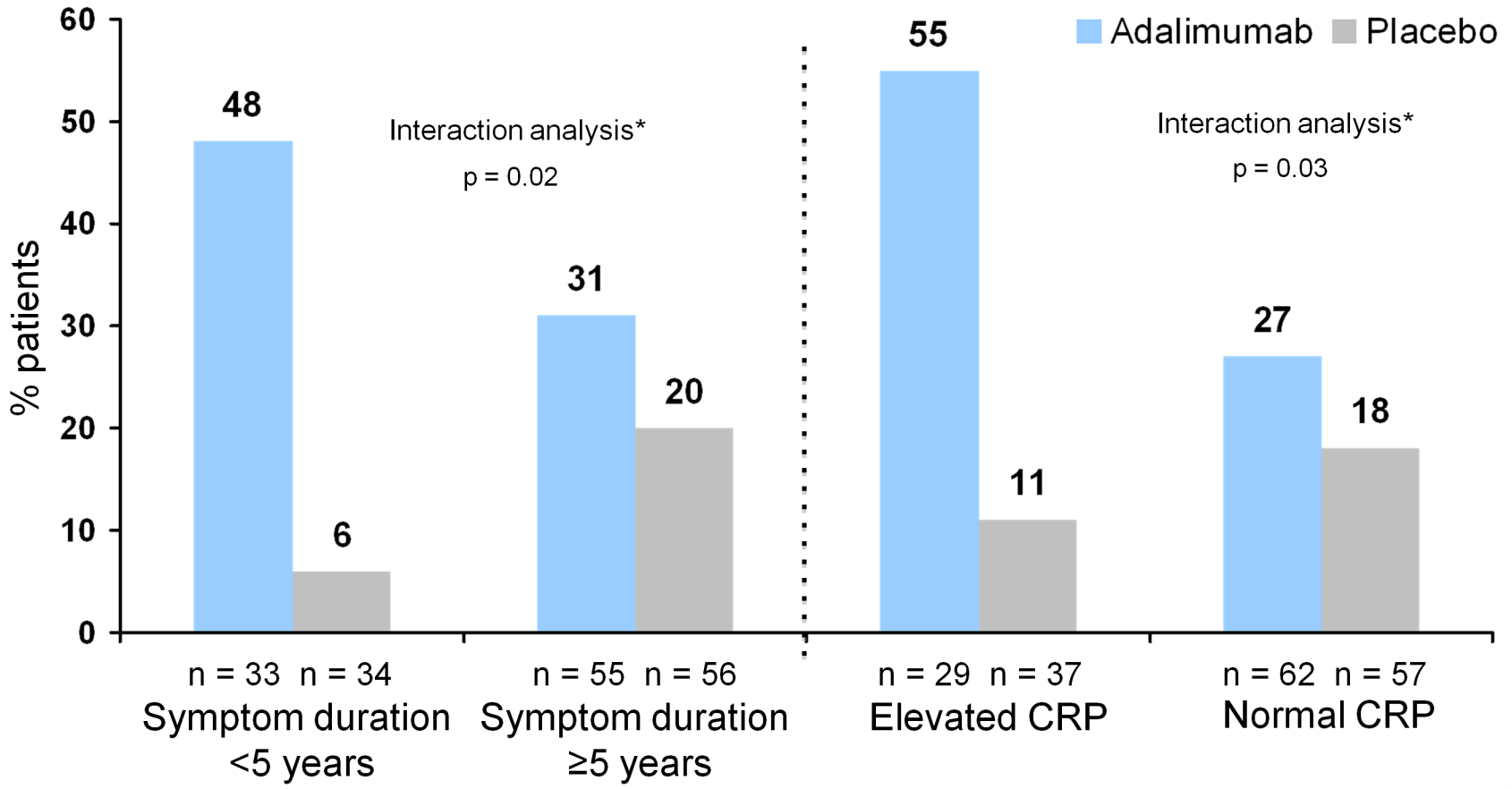


*$P < 0.0001$; †$P < 0.001$; §$P < 0.01$ versus placebo

Braun J, et al. RMD Open 2018

ASAS40 Response to Adalimumab by Symptom Duration and Baseline CRP at Week 12 in Patients with non-radiographic axial SpA

ABILITY-I Study: 40 mg Adalimumab s.c. EOW vs placebo over 12 weeks



**logistic model used to assess treatment and subgroup interaction, with significant interaction defined as p≤0.10*

Sieper J et al. Ann Rheum Dis 2012 Jul 7. [Epub ahead of print] (with permission)

Impact of obesity on response to bDMARDS in axSpA

Table 2 Crude response rates at 1 year of treatment with a first TNF inhibitor after stratification for different BMI categories

Outcome	$n = 531$	BMI category			p
		Normal $n = 282$	Overweight $n = 178$	Obese $n = 71$	
ASAS40	494	44%	34%	29%	0.02
ASAS40 TNFi other than INF	383	45%	34%	24%	0.008
ASAS40 TNFi: INF	111	42%	36%	44%	0.83
ASAS partial remission	531	39%	24%	17%	<0.001
BASDAI-50	488	48%	40%	33%	0.06
ASDAS improvement ≥1.1	423	59%	46%	37%	0.003
ASDAS <2.1	468	56%	41%	25%	<0.001
ASDAS improvement ≥2	423	25%	25%	13%	0.14
ASDAS <1.3	468	29%	15%	10%	<0.001

Normal weight = BMI 18.5–25; overweight = BMI 25–30; obese = BMI >30

ASAS Assessment in SpondyloArthritis International Society, *ASAS40* 40% improvement according to ASAS, *ASDAS* Ankylosing Spondylitis Disease Activity Score, *BASDAI-50* 50% improvement in Bath Ankylosing Spondylitis Disease Activity Index, *BMI* body mass index, *INF* infliximab, *TNFi* tumor necrosis factor inhibitor

Micheroli R et al, Arthr Res Ther 2017

Effect of bDMARDs in axSpA depending on secondary FM

Table 2 Effectiveness endpoints of the main analysis using the FiRST definition for fibromyalgia

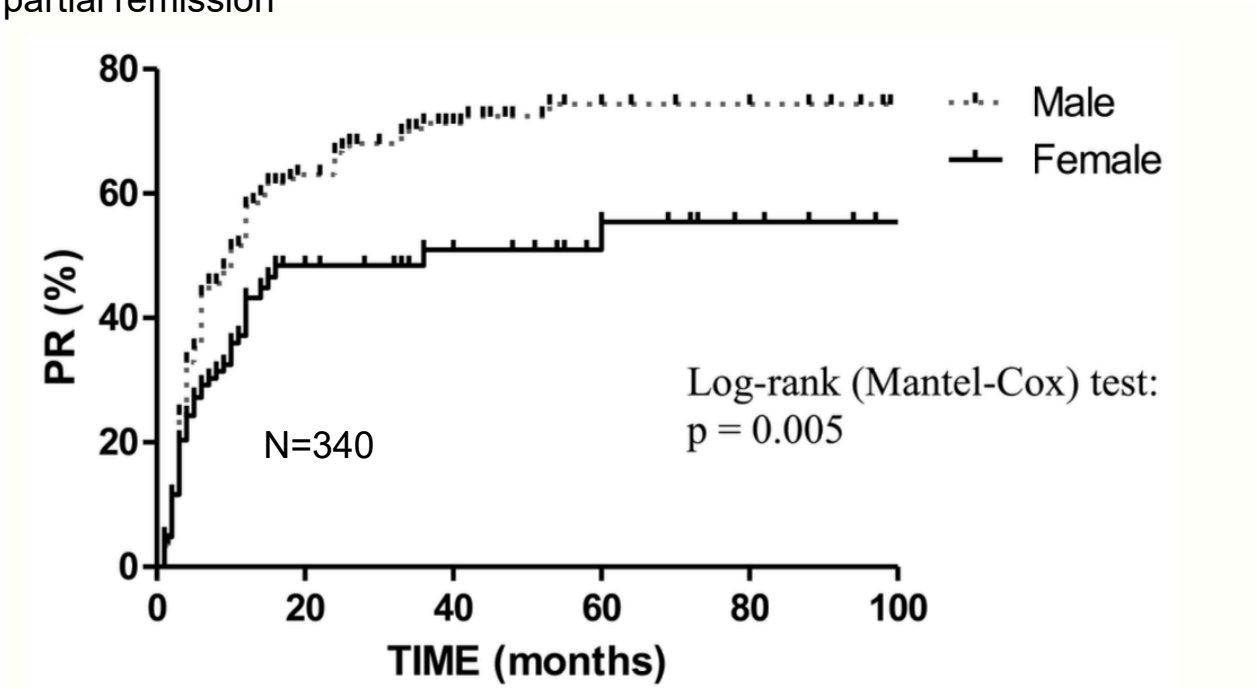
Effectiveness endpoint	All patients n=508 (%)	Fibromyalgia† Yes n=192 (%)	Fibromyalgia† No n=316 (%)	Crude OR (95% CI)‡	P value*	Adjusted OR (95% CI)§	P value
BASDAI response¶	258/508 (50.8)	87/192 (45.3)	171/316 (54.1)	0.7 (0.5 to 1.0)	NS	0.7 (0.5 to 1.1)	NS
ASAS 40	201/508 (39.6)	55/192 (28.6)	146/316 (46.2)	0.5 (0.3 to 0.7)	<0.001	0.5 (0.3 to 0.8)	0.001
ASAS 20	268/508 (52.8)	83/192 (43.2)	185/316 (58.5)	0.5 (0.4 to 0.8)	<0.001	0.6 (0.4 to 0.9)	0.008
ASDAS MI	117/508 (23.0)	36/192 (18.7)	81/316 (56.3)	0.7 (0.4 to 1.0)	NS	0.8 (0.5 to 1.3)	NS
ASDAS CII	265/508 (52.2)	87/192 (45.3)	178/316 (56.3)	0.6 (0.5 to 0.9)	0.02	0.7 (0.5 to 1.1)	NS
ΔNSAID score ≥50%	235/508 (46.3)	69/192 (35.9)	166/316 (52.5)	0.5 (0.4 to 0.7)	<0.001	0.6 (0.4 to 0.8)	0.003
ΔCRP >0 mg/L	325/508 (64.0)	112/192 (58.3)	213/316 (67.4)	0.7 (0.5 to 1.0)	NS	0.7 (0.5 to 1.2)	NS
ASDAS MDA at 12 weeks	264/508 (52.0)	74/192 (38.5)	190/316 (60.1)	0.4 (0.3 to 0.6)	<0.001	0.5 (0.3 to 0.7)	<0.001
ASDAS ID at 12 weeks	126/508 (24.8)	28/192 (14.6)	98/316 (31.0)	0.4 (0.2 to 0.6)	<0.001	0.4 (0.3 to 0.7)	<0.001
NSAID score ≤10 at 12 weeks	401/508 (78.9)	140/192 (72.9)	261/316 (82.6)	0.6 (0.4 to 0.9)	0.01	0.6 (0.4 to 0.9)	0.02
CRP <6 mg/L at 12 weeks	392/508 (77.2)	145/192 (75.5)	247/316 (78.2)	0.9 (0.6 to 1.3)	NS	0.7 (0.5 to 1.2)	NS

*Statistical significance was established for P<0.05.
†Fibromyalgia according to the FiRST questionnaire.
‡Crude OR: result of the univariable analysis.
§Adjusted OR for age (below 40), gender (male), past or present X-ray sacroiliitis, past or present MRI sacroiliitis, abnormal CRP, smoking status, HLA B27 and absence of previous TNFb exposure.
¶Data in the table are presented as number and (%).

Molto A et al, Ann Rheum Dis 2018

Gender differences on response to TNFi

Patients in partial remission



Lubrano E et al, J Rheumatol 2018

Analysis from SCQM

		Adjusted Model 2**		
Outcome	N	OR	95% CI	p
ASAS20	175	0.31	0.12–0.80	0.02
ASAS40	175	0.45	0.20–1.02	0.06
ASDAS improve ≥ 1.1	167	0.21	0.06–0.67	0.01
ASDAS < 2.1	167	0.27	0.10–0.68	0.007
ASDAS improve ≥ 2	167	0.27	0.09–0.70	0.01
ASDAS < 1.3	167	0.11	0.03–0.36	< 0.001

Hebeisen M et al, J Rheumatol 2018

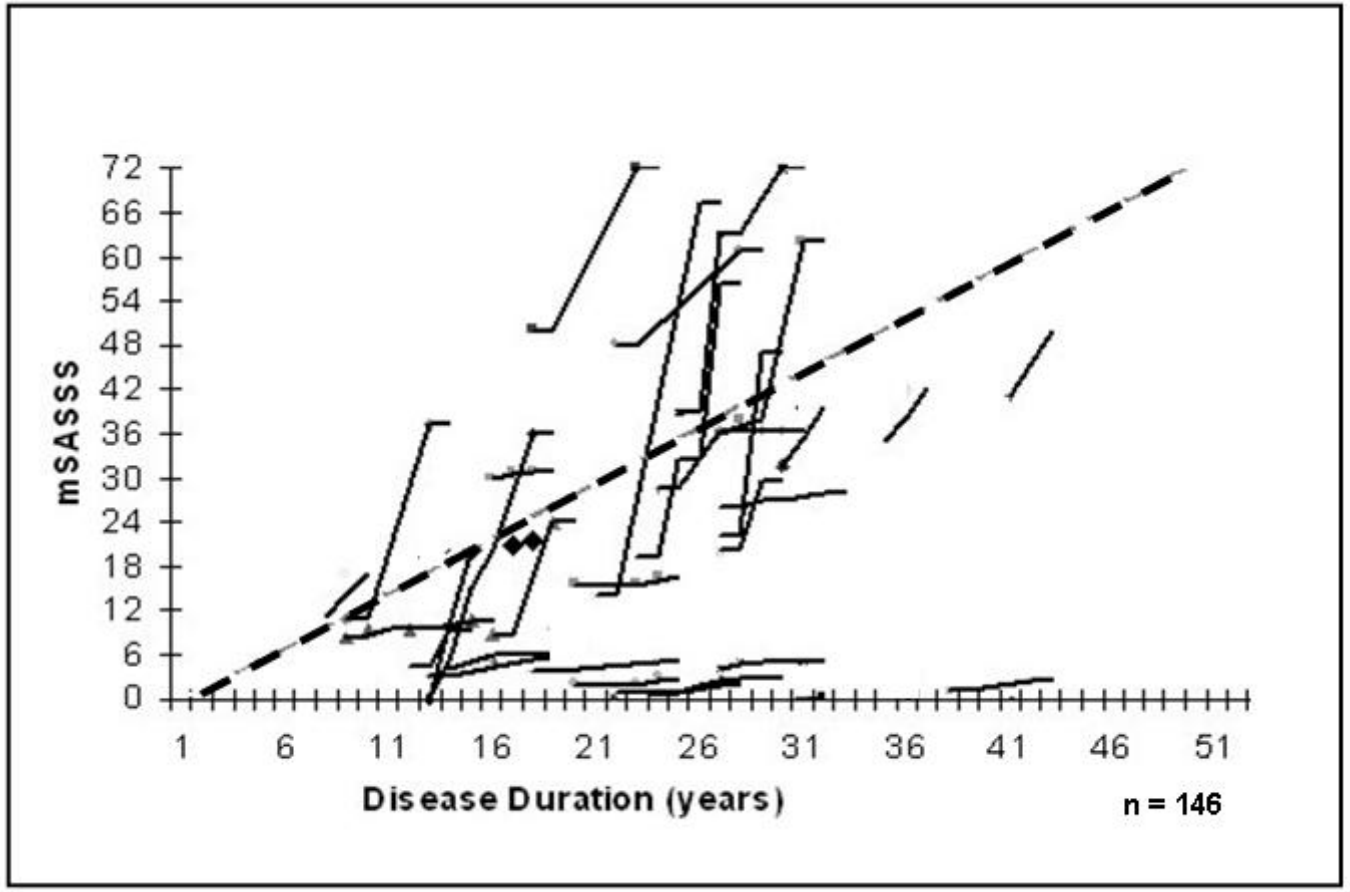
EULAR 2021 - POS0228 BASELINE CHARACTERISTICS AND TREATMENT RESPONSE TO IXEKIZUMAB CATEGORISED BY SEX IN RADIOGRAPHIC AND NON-RADIOGRAPHIC AXIAL SPONDYLARTHRITIS PATIENTS THROUGH 52 WEEKS: DATA FROM 3 PHASE III, RANDOMIZED, CONTROLLED TRIALS

I. Van der Horst-Bruinsma *et al.,* Amsterdam, The Netherlands

	Males R-axSpA	Females R-axSpA
ASAS40-Response Week 16	39%	16,7%
ASAS40-Response Week 52	44%	33,3%

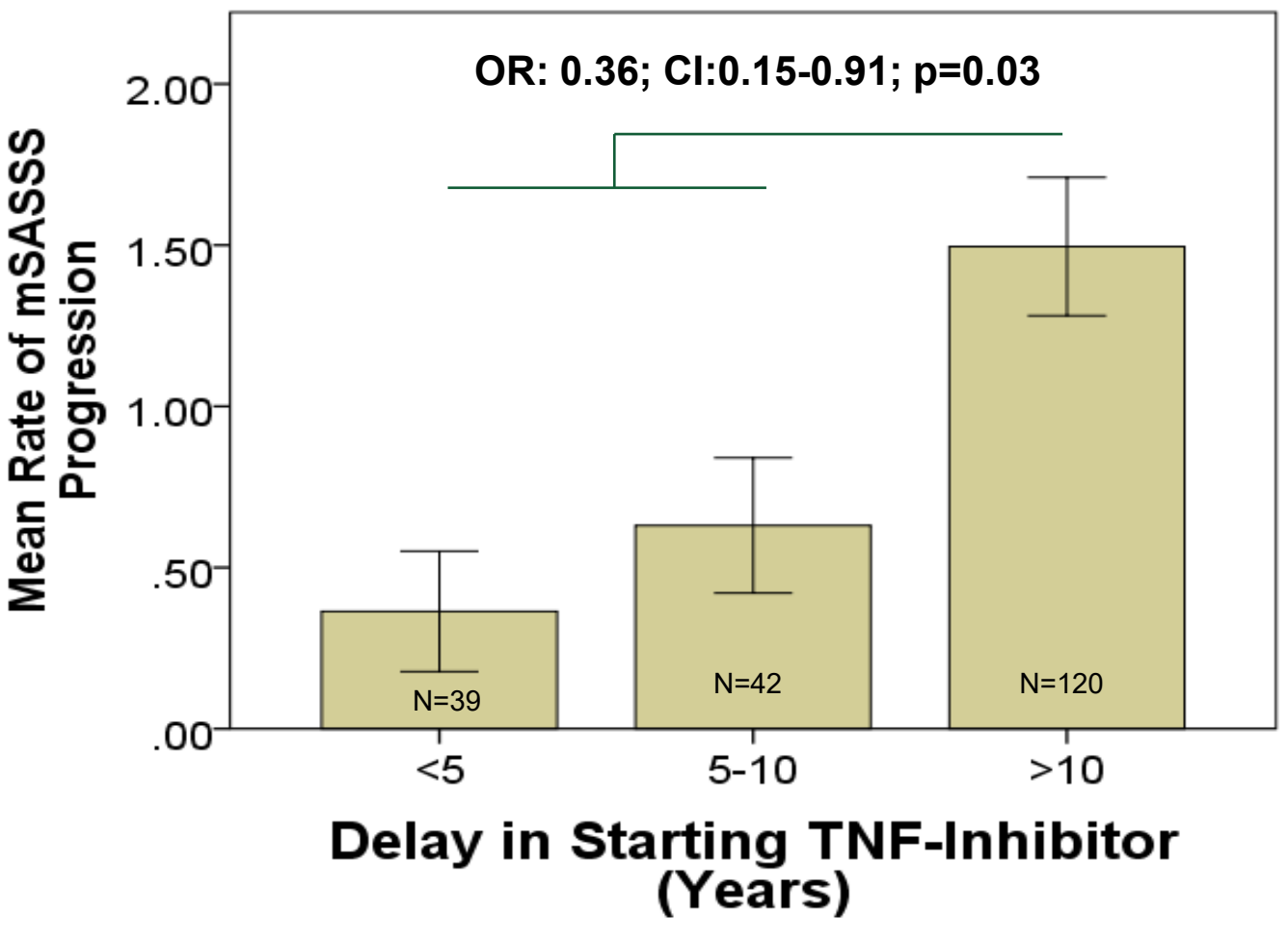
	Males Nr-axSpA	Females Nr-axSpA
ASAS40-Response Week 16	46%	23,9%
ASAS40-Response Week 52	30%	30,4%

Major Individual Variations in the Radiographic Progression in Patients with Ankylosing Spondylitis



N = 146 patients with AS who had never received anti-TNF therapy
Retrospective evaluation of a historical cohort

Early treatment with anti-TNFa is associated with better radiographic outcomes



Haroon N, et al. Arthritis Rheumatol 2013

AxSpA: a patient-based approach to diagnosis and treatment, with a specific focus on gender and the elderly

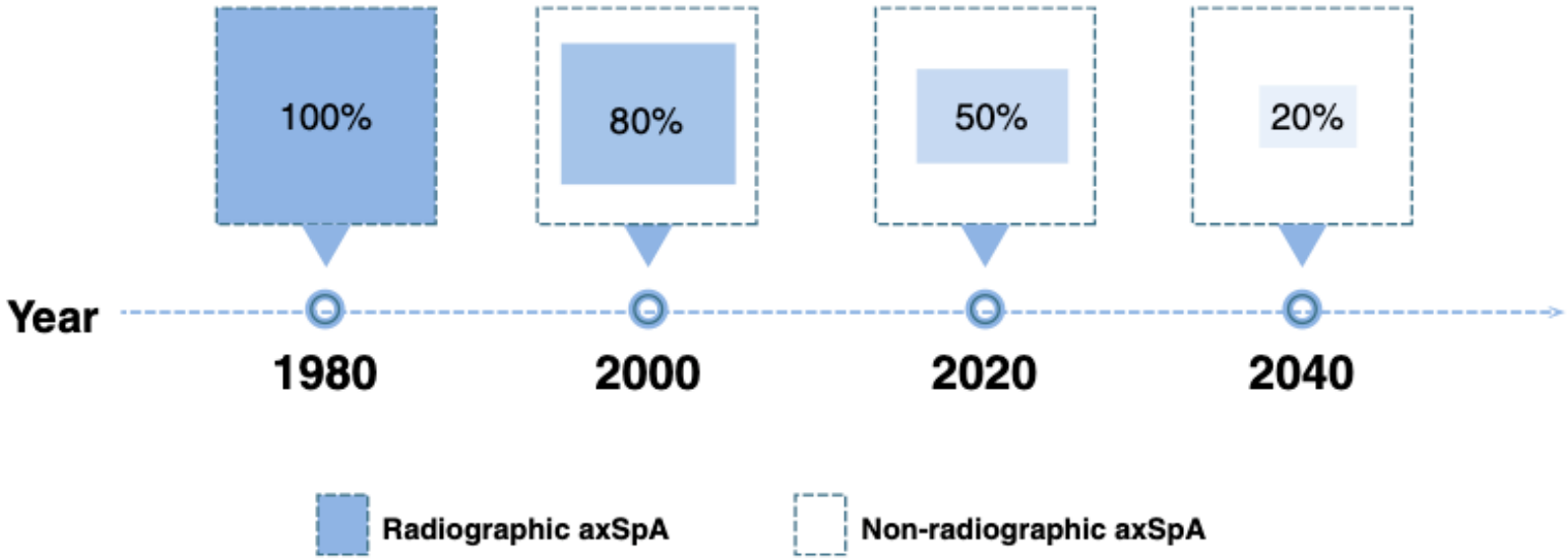


Figure 1 Distribution of axial spondyloarthitis subtypes over time. The graph represents an estimation of the prevalence ratio between non-radiographic and radiographic axial spondyloarthritis, showing the estimated percentage of patients with radiographic axial spondyloarthritis for each period at the time of diagnosis. Adapted from Benavent *et al*. Clin Rheumatol. 2021 Feb;40(2):501–512. axSpA, axial spondyloarthritis.

Navarro-Compán V et al. Ann Rheum Dis 2021