association between periodontal disease and ankylosing spondylitis are still relatively limited.

Objectives: The current systematic review and meta-analysis was conducted with the aims to identify all published studies that investigated the risk of ankylosing spondylitis among patients with periodontal disease versus individuals without periodontal disease and summarize their results together to better characterize this relationship.

Methods: Two investigators independently searched for published studies indexed in MEDLINE and EMBASE database from inception to October 2018 using the search strategy that included the terms for periodontal disease and ankylosing spondylitis. The inclusion criteria are as follows: (1) Case-control or cohort studies that compared the risk of ankylosing spondylitis between patients with periodontal disease versus individuals without periodontal disease (2) Individuals without periodontal disease were used as comparators in cohort studies while individuals without ankylosing spondylitis were used as controls in case-control studies and (3) Effect estimates and 95% confidence intervals (CI) of the association of interest were reported. Point estimates and standard errors from each study were extracted and combined together using the random effect, generic inverse variance technique of DerSimonian and Laird.

Results: Of 554 retrieved articles, a total of 7 case-control studies with 41,575 participants met the eligibility criteria and were included into the meta-analysis. The risk of ankylosing spondylitis among patients with periodontal disease was significantly higher than individuals without periodontal disease with the pooled odds ratio of 2.16 (95% CI, 1.48–3.16). The statistical heterogeneity was low with an I^2 of 45%. The forest plot of this meta-analysis is shown as figure 1. Funnel plot was created for evaluation of publication bias. The plot was relatively symmetric which did not suggest the presence of publication bias in favor of studies with positive results.

Conclusion: A significantly increased risk of ankylosing spondylitis among patients with periodontal disease was demonstrated in this study. This observation may provide more understanding of the pathogenesis of this chronic inflammatory arthritis.

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Figure 1. Forest plot of the meta-analysis on the association between periodontal disease and risk of ankylosing spondylitis

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AB0733

AN EYE FOR THE HEART: ARE RETINAL VASCULAR PARAMETERS ASSOCIATED WITH CARDIOVASCULAR DISEASE IN ANKYLOSING SPONDYLITIS?

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Background: Chronic systemic inflammation in patients with ankylosing spondylitis (AS) contributes to the development of cardiovascular disease (CVD). Microvascular changes are thought to precede clinically overt CVD and its early recognition could improve timely treatment. The microvasculature of the retina and fingertips are easily accessible for non-invasive visualization. Furthermore, previous studies have shown an association between CVD and respectively retinal morphology and digital microvascular function (fingertips), in patients without rheumatic diseases. The retinal

and digital vasculature could provide a unique opportunity to recognize early signs of CVD in AS patients.

Objectives: To investigate whether retinal vascular parameters and digital microvascular function in AS patients are associated with the 10 year CVD risk.

Methods: Cross-sectional study in AS patients (diagnosis according to modified New York criteria) between 50-75 years without a history of diabetes mellitus or cerebrovascular disease. Consecutive patients were recruited consecutively from the Rheumatology outpatient clinic of the Amsterdam UMC, location VUmc and Reade. Patient characteristics, CVD (risk factors), disease duration/activity (ASDAS), C-reactive protein and lipid profile were assessed. The digital microvascular function (the reactive hyperemia index, RHI) was tested through endo Periphral Arterial Tone measurement at the finger tips (EndoPAT). Retinal vascular parameters were assessed through fundus photography, and identified with Singapore I Vessel Assessment (SIVA) software: central retinal artery and vein equivalent (CRAE, CRVE), arteriovenous ratio (AVR), curvature tortuosity arterioles and venules (cTORTa, cTORTv), fractal dimension of arteries and venules (FrDiA, FrDiV). SIVA parameters were reported as continuous values. The Framingham risk score (FRS) was calculated and classified based on the 10 years CVD risk (low risk <10%, intermediate risk 10-20%, high risk >20%). Linear regression analyses were used to determine the association between the FRS categories and retinal parameters or digital microvascular function (RHI), correcting for age and disease duration.

Results: Fifty-three AS patients were included (age 60±6 years, 55% female, 74% HLA-B27 positive, disease duration 35 years ±13, ASDAS 2.3±1.0). Fifty-five% was currently treated with NSAIDs and 47% with a TNF inhibitor. Based on the FRS, 36% had a high risk of CVD in the next 10 years, 42% an intermediate and 12% a low risk. In multivariable analyses, patients with an intermediate and high risk of CVD (FRS) had a significantly lower diameter of the central retinal artery (CRAE; $p < 0.01$ for both risk groups) and arteriovenous ratio (AVR; only for high risk; $p = 0.03$) as compared with patients with a low risk. There was no association between the RHI and the cardiovascular risk.

Conclusion: This study suggests an association between the 10 years CVD risk and the morphology of the retinal arterial vessels in older AS patients (≥50 years). This is in accordance with some other studies reporting on atherosclerosis in the general population. No association was found between CVD risk and microvascular function in the fingertips. In conclusion, the measurement of retinal vascular parameters might be a new technique to detect early stages of atherosclerosis in AS.

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AB0734

CHANGES IN HEIGHT AND BODY MASS INDEX OVER TIME IN PATIENTS WITH AXIAL SPONDYLOARTHRITIS, TREATED WITH TUMOR NECROSIS FACTOR-A INHIBITORS

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Background: Monitoring of height and body mass index (BMI) is an important for patients with axial spondyloarthritis (axSpA). Reduction of height not only reflects spine remodeling, but affects various indexes, such as BMI (fig.1). However, BMI calculations assume that the adult patient's height is a constant. Therefore these calculations may be inaccurate in patients whose height is susceptible to decrease.

Figure 1. Difference in BMI in the person with unstable height and stable body mass.

Objectives: To evaluate changes in height and BMI over time in patients with axSpA, treated with tumor necrosis factor- α inhibitors (TNF- α).

Methods: The study included 51 patients with axSpA (ASAS criteria 2009). All the patients were treated with TNF- α for one and > years. The patient's height and weight measured before the beginning TNF- α inhibitors and during the treatment. Only patients with stable weight (variability ± 2.0 kg from baseline) were included in the study.

Results: Mean age of axSpA patients at baseline was 40.22 ± 13.51 , 38 (74.5%) were male, disease duration 12.77 ± 6.82 , duration of TNF- α inhibitors treatment 5.64 ± 2.21 years, all the patients had inactive disease. In 19 patients with axSpA diagnostic delay was 8 years.

Patients' height varied between 1.55 – 1.92 m (average height 1.73 ± 0.07 m). Male's mean height was 1.78 ± 0.05 m, women's – 1.63 ± 0.05 m. Height decrease over time in patients with AxSpa was 3.74 ± 1.83 cm (from 1.0 to 15.0 cm). Maximal decrease in height was shown in patients with 10 years after the first symptoms emerged. Mean weight in patients who had height loss was 79.75 ± 12.7 kg. Among patients who had decrease of height and stable body mass the difference between BMI at subsequent measurement and the time of treatment initiation (Δ BMI) was 1.15 kg/m^2 : BMI at baseline = $26.25 \pm 3.34 \text{ kg/m}^2$, over time of observation BMI = $27.39 \pm 3.38 \text{ kg/m}^2$.

Conclusion: Height loss in axSpA is significant even in patients with inactive disease. Height loss affects BMI calculation that could lead to overestimation of cardiovascular risk, obesity and could change all of the BMI-dependent areas. Correction of BMI calculation for the patients with unstable height is needed.

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AB0734B

BONY BRIDGE ON FACET JOINT OR LATERAL SIDE OF LUMBAR VERTEBRA IS MORE FREQUENT AND CORRELATED WITH LUMBAR FLEXION FUNCTION THAN THAT ON ANTERIOR SIDE OF LUMBAR VERTEBRA IN ANKYLOSING SPONDYLITIS; ANALYSIS OF ANKYLOSIS REGISTRY OF AXIAL SPONDYLOARTHRITIS (ANKAS)

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Background: Ankylosing spondylitis (AS) is a form of chronic inflammatory arthritis characterized by sacroiliitis and a marked propensity for sacroiliac joint and spinal fusion. The modified Stoke Ankylosing Spondylitis Spinal Score (mSASSS) has been used when measuring radiographic progression in AS, which only measures bony changes of anterior side in vertebral body (AV). Variation of this score is too small to assess radiographic progression in AS. Some patients have syndesmophytes on lateral side in vertebral body (LV) or ankylosis in facet joints (FJ).

Objectives: We planned this study to know which side of lumbar vertebra ankylosis more frequently develops in and is more correlated with lumbar flexion function.

Methods: We analyzed ANKylosis registry of Axial Spondyloarthritis (ANKAS). In this cohort, the patients with AS are examined by antero-posterior and lateral view of X-ray every 2 years and low dose whole spine computed tomography (CT) every 5 years to determine radiographic progression. We analyzed the location of near total or total bony bridge at each level of lumbar spine by X-ray and CT in 518 patients with AS.

Results: Male was 78% and mean age was 38.8 ± 2.8 . Ankylosis or bony bridge in sacroiliac joint (SIJ), FJ, LV and AV was respectively 55.2%, 22.8%, 21.6% and 13.1%. T12L1 was the most frequent level of ankylosis in FJ (31.7%) and LV (30.3%). For FJ and LV, there was a tendency that upper levels of spine have more ankylosis, but not in AV. The patients who didn't have SIJ ankylosis also have a tendency of not having any bony bridge in lumbar spine (negative predictive value: 92.24%, OR 28.1, 95% CI:16.3-48.4, $p=0.000$). We analyzed the correlation between the flexion score of Bath AS Metrology Index (BASMI) 10 and the site of ankylosis. FJ ankylosis showed the strongest correlation with lumbar flexion range ($R^2=0.456$, $p=0.000$), but bony bridge of LV and AV showed weak correlation with that (respectively, $R^2=0.288$, $R^2=0.155$, $p=0.000$). We analyzed the correlation between ankylosis of FJ and bony bridge of AV or LV respectively. Ankylosis of FJ and bony bridge of LV showed a stronger correlation ($R^2=0.712$, $p=0.000$) than that of AV ($R^2=0.515$, $p=0.000$).

Conclusion: Bony bridge in LV is not only more developed and correlated with ankylosis in FJ, but also more correlated with limitation of anterior lumbar flexion than that in AV. We suggest bony changes of LV should be also included in radiographic score system for more sensitive detection of radiographic progression in AS.

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AB0734C

REMISSION IN AXIAL SPONDYLOARTHRITIS: A DELPHI-METHOD QUESTIONNAIRE AMONG EXPERTS TO EVALUATE THE AVAILABLE ASSESSMENT TOOLS TO MEASURE DISEASE ACTIVITY AND TO DEVELOP A CONSENSUS DEFINITION OF REMISSION

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Background: Several definitions of remission in axial spondyloarthritis (axSpA) have been proposed based on the available disease activity assessment tools, but to date we lack a universally accepted definition of remission for the development of clinical trials or routine clinical practice.

Objectives: To explore the degree of agreement that exists among the experts managing patients with axSpA regarding the assessment tools available to evaluate disease activity in these patients and to develop a consensus definition of clinical remission in axSpA.

Methods: As a consensus method, we followed the modified Delphi methodology. A scientific committee developed 80 statements that were submitted in 2 rounds (in September and October 2018, respectively) to a panel of 152 rheumatologists from GRESSER (GRupo de Estudio de ESpondyloarthritis de la Sociedad Española de Reumatología), the Spanish working group with common interests in spondyloarthritis, addressing controversial issues regarding the current assessment of remission; clinical features, laboratory and imaging tests results, and if they should be