Definition of organ involvement

To evaluate myocardial involvement, we used a modified Medsger score. The Medsger scale mainly relies on the left ventricular ejection fraction (LVEF) for determination of myocardial involvement (1). However, the use of this parameter alone could lead to an underestimation of presence of myocardial involvement. Therefore, we used a combined value where patients had to have at least two of the following: arrhythmias (>2% ventricular or supraventricular arrhythmia, atrial fibrillation), conduction problems, decreased LVEF < 54%, diastolic or systolic dysfunction, pericarditis or pericardial effusion. Interstitial lung disease (ILD) was assessed by high resolution computerised tomography, defined based on presence of interstitial fibrosis or ground glass opacities as reported by the radiologist. Additionally, we defined clinical relevant ILD as abnormalities on the HRCT AND a forced vital capacity of predicted < 70%. Pulmonary arterial hypertension (PAH) was defined as a mean pulmonary arterial pressure ≥25mmHg at rest as assessed by right heart catheterization (RHC); including presence of precapillary PH, defined by a pulmonary capillary wedge pressure ≤15mmHg and a pulmonary vascular resistance >2 Wood units on RHC. Gastrointestinal symptoms included reflux, constipation, diarrhoea and faecal incontinence. Synovitis was scored yes if present at physical examination by an experienced rheumatologist. Myositis was defined based on the combination of creatine kinase measurements, proximal muscle weakness and/or histology showing inflammatory muscle infiltrate.

Functional assessments included NYHA classification, six-minute walking distance (in meters) (2), oral aperture (measured by the maximal interincisal distance in mm) (3), handgrip strength (measured in kilograms by a handheld dynamometer) (4), finger-to-palm distance (standard finger-to-palm (FTP) method; full fist closure = 0 mm) (5).

The Health Assessment Questionnaire (HAQ) was originally developed to assess functional status in adults with arthritis. For patients with SSc scleroderma specific items have been added, the Scleroderma-Health Assessment Questionnaire (SHAQ). The HAQ-DI contains 8 categories: 1) dressing and grooming, 2) arising, 3) eating, 4) walking, 5) hygiene, 6) reach, 7) grip, and 8) common daily activities. For each category patients have to report the amount of difficulty they have in performing the activity on a scale of 0-3, where 0 indicates 'without difficulty' and 3 indicates 'unable to do'. A higher score indicates worse functionality.

Health related quality of life assessments

The Dutch version of the SF36 was used (6). The SF-36 questionnaire consists of 8 domains: physical function, physical role, bodily pain, general health, vitality, social function, emotional role and mental health. Scores can be summarized as the Physical Component Summary (PCS; 0–100) and Mental Component Summary (MCS; 0-100) scores. For this study, summary MCS and PCS were calculated using norm-based scoring, which employs linear transformation to achieve standardized scores with a mean (standard deviation; SD) of 50 (10) for each dimension by using the Dutch general population as a reference group (7). Higher PCS and MCS indicate a better HRQoL.

The EQ-5D is a generic tool consisting of five questions on mobility, self-care, usual activities, pain/discomfort and anxiety/depression, with three potential answers (1 = no problem, 2 = moderate problem, 3 = severe problem) for each item. A sum utility score is calculated using nation-specific algorithms (8). The Dutch tariff (9) was applied in the present study. Results vary from -0.59 to 1. Negative scores indicate a patient's perception of a health status worse than death, while a score of 1 means perfect health. The second part of the questionnaire consists of a single visual analogue scale (VAS) through which patients are asked to rate their health of the day from 0 to 100. Higher values represent better health (10).

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