Hand function impairment in systemic sclerosis: Outcomes, Mechanisms and Experience (HANDSOME) study

Published: 19-03-2024
Last updated: 22-02-2025

Primary Objective: Determination of risk factors for hand function impairment in systemic sclerosis (SSc) patients with early disease, very early disease and established hand impairment (contractures) at 2 years follow-upSecondary Objective(s):-...

Ethical review	Approved WMO
Status	Recruiting
Health condition type	Autoimmune disorders
Study type	Observational invasive

Summary

ID

NL-OMON56810

Source
ToetsingOnline

Brief title
HANDSOME study

Condition

- Autoimmune disorders
- Connective tissue disorders (excl congenital)

Synonym
scleroderma, Systemic sclerosis

Research involving
Human

Sponsors and support

Primary sponsor: Universitair Medisch Centrum Utrecht
Source(s) of monetary or material Support: Reuma Nederland

Intervention

Keyword: Function, Hand, Imaging, Scleroderma

Outcome measures

Primary outcome

- The change in hand function over time and development of impairment at 2 years, measured with:

- Range of motion (ROM) wrists

- Range of motion (ROM) finger joints

- Delta finger to palm distance (dFTP)

- The modified HAMIS (mHAMIS)

- Hand grip strength (JAMAR, JAMAR punch 1-2 and lateral grip)

- The Cochin Hand Function Scale (CHFS).

- Predictive value of imaging features and biomarkers in serum and tissue at baseline for (change in) extent of hand impairment at follow-up

- Predictive value of biomarkers in serum and tissue; immunological markers and markers for fibrogenesis in serum, in relation to features on ultrasound, elastography and MRI for (change in) level of hand impairment at follow-up

Secondary outcome

- Imaging characteristics on US and MRI images:

- Compared between groups (SSc patients with versus without hand impairment, SSc versus VEDOSS patients)

- Compared between patients with and without developing hand impairment at follow-up

- related to each other

- Hand impairment (measured as described above) in dominant versus non-dominant hand.

- health-related quality of life (EQ5D-5L), daily functioning (S-HAQ), hand function (CHFS) and hand function measures over time

- Change in PASTUL (skin self-assessment) over time and relation to mRSS and hand function measures

- Disease severity; Progression from VEDOSS to SSc established disease (according to the 2013 EULAR-ACR criteria)

- Shear wave elastography and hand function measures at baseline and at 2 years follow-up

- Normal values for elastography of hand tendons

Study description

Background summary

Almost 90% of systemic sclerosis (SSc) patients experience hand function limitation, which leads to impaired daily functioning and work participation. An important cause of impaired hand function are contractures of the hand, which are reported in half of patients. Contractures were more frequent in patients with diffuse cutaneous systemic sclerosis (dcSSc) and in the dominant hand, and associated with anti-topoisomerase I (ATA) positivity. Only few studies explored imaging techniques in SSc hands. Thickening of the A1 pully of flexor tendons and flexor tendons was associated with hand disability in 29 patients and soft tissue calcifications were seen in affected tendons, but this has not been studied in more detail. Furthermore, ultrasound and MRI showed subclinical synovitis or tendinitis and erosions, which could contribute to impaired hand function as well. Shear wave elastography (SWE), a new imaging modality, has been studied in SSc skin and muscles but no studies have assessed hand tendons. Moreover, no studies investigated tenosynovial changes and underlying biological mechanisms, especially not in correlation with imaging or functional tests. This leaves clinicians *in the dark* regarding diagnostic work-up and effective management. Current management for hand symptoms includes exercises, splints, and sometimes immunosuppressive therapies. However, it is

not known which treatment is applicable for which patient and efficacy of immunosuppressive drugs has not been confirmed in trials. As impaired hand function in SSc hugely impacts quality of life and daily functioning, there is a high unmet need for effective treatments. With the availability of new imaging modalities, biomarkers and lab techniques, opportunities arise to tackle this problem.

Study objective

Primary Objective:
Determination of risk factors for hand function impairment in systemic sclerosis (SSc) patients with early disease, very early disease and established hand impairment (contractures) at 2 years follow-up

Secondary Objective(s):
- Identify underlying mechanisms leading to hand function impairment and contractures in patients with VEDOSS (very early diagnosis of systemic sclerosis) and SSc with and without contractures and in different disease subsets in order to guide future research into new targets for personalized treatment in this heterogeneous disease.
a. Explore differences in serum biomarkers for inflammation, vasculopathy and fibrosis in relation to hand function impairment and contractures
and imaging features.
b. Identify subgroups based on clinical, immunological, and imaging characteristics.
- Validation of the Dutch PASTUL questionnaire, and assessment of benefit of self-assessment of skin in relation to hand function impairment
- Define normal values for elastography of hand tendons

Study design

This is a longitudinal observational multicenter study in patients with VEDOSS and SSc who are seen at the outpatient clinic of the Department of Rheumatology & Clinical Immunology of the University Medical Centre Utrecht (UMCU), st Antoniushospital Nieuwegein, UMC Groningen (UMCG) Leiden UMC (LUMC), Radboud UMC, or Royal Free Hospital (RFH) London. Patients will be followed for 2 years. Healthy controls are seen once.

Study burden and risks

There are four study visits; at start, 6 months, 12 months and 24 months. During the visits, participants are seen by a doctor-researcher or research nurse who takes hand function measurements and skin score (40 minutes), followed by ultrasound and elastography (40 minutes) and blood is taken (15 minutes). During the first study visit, an MRI of the hands will be performed

on participants from the UMC Utrecht. This will take approximately 45 minutes. If desired, the study visits will be combined as much as possible with regular checks, so that travel time is limited. Participants receive an invitation for an online questionnaire (20 minutes) that they can complete around the study visits, at a location and time that suits them best.
Participation in this study does not entail any significant risks. No experimental treatment is given and imaging (ultrasound, MRI) does not cause radiation exposure. Blood collection via venipuncture will take place four times, during which 10 ml of blood will be taken. For comparison: when donating blood at the blood bank, 500 ml of blood is taken in one go. Blood collection can sometimes be painful during the collection.

For the healthy controls, there is one study visit. During the visit, participants are seen by a physician-researcher who performs elastography measurements using an ultrasound device. This procedure is non-invasive, harmless, and involves no risks. The study visit takes approximately 15 minutes.

Contacts

Public
Universitair Medisch Centrum Utrecht

Heidelberglaan 100
Utrecht 3584 CX
NL
Scientific
Universitair Medisch Centrum Utrecht

Heidelberglaan 100
Utrecht 3584 CX
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

For the patient group:
1. Age >18 years
2a. Diagnosis of SSc according to the 2013 EULAR-ACR classification criteria for SSc,
2b. Diagnosis of VEDOSS, which is defined as the presence of RP, puffy fingers, SSc specific autoantibodies and abnormal nailfold capillaroscopy.
3. Written informed consent

For the healthy controls:
1. Age >18 years
2. Written informed consent

Exclusion criteria

For the patient population:
1. Age < 18 years
2. Patients with diabetic cheiroarthropathy and Dupuytren*s disease
3. No written informed consent

For the healthy controls:
1. Age < 18 years
2. No written informed consent
3. Age > 85
4. Active smoking
5. Diabetes
6. Obesity (BMI >30)
7. Past operations on hands
8. Not being able to put both hands flat on the table while all fingers make contact

Study design

Design

Study type:	Observational invasive
Intervention model:	Other
Allocation:	Non-randomized controlled trial
Masking:	Open (masking not used)

Primary purpose: Diagnostic

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	19-04-2024
Enrollment:	270
Type:	Actual

Ethics review

Approved WMO Date:	19-03-2024
Application type:	First submission
Review commission:	METC NedMec
Approved WMO Date:	13-06-2024
Application type:	Amendment
Review commission:	METC NedMec
Approved WMO Date:	03-02-2025
Application type:	Amendment
Review commission:	METC NedMec

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL85445.041.23