

Examination of peripheral blood flow in systemic sclerosis

Scleroderma (systemic sclerosis or SSc) is a severe, chronic disease that results in an excessive deposition of collagen in the skin and internal organs.

Raynaud's syndrome is a pathological reaction of the small vessels to cold or stress, and one of the early Ssc symptoms. The affected areas become pale, followed by a bluish discolouration and finally a reactive reddening appears. This can lead to burning pain, paraesthesia and a feeling of coldness. In addition to the most frequent localisation on the fingers, other areas such as toes, nose and ears can also be affected. A complication is the development of chronic wounds on the fingers (digital ulcers), which in the worst case can lead to amputation of the fingers.

Despite recent advances in disease management, systemic systemic sclerosis remains a treatable but not curable disease. Iloprost is the gold-standard treatment for digital ulcers and is often used for the treatment of secondary Raynaud's syndrome. It is a venously administered drug, that improves the blood circulation of the acral skin.

We used a thermal imaging camera to measure the temperature of the skin at different body sites. It was recorded in a two-hour rhythm from 8 am until 10 pm. on the day of admission, and on the second and the fifth day of the inpatient stay. Alongside this, the associated environmental factors were recorded: clothing, current medication, physiotherapy, and smoking. Additional medical information was collected: age, body height, body weight, secondary organ manifestations of Ssc (e.g. at the lung), lung function examination, skin elasticity (fist closure). A follow-up measurement was carried out on 10 subjects.

The primary aim of the explorative study is to investigate the circadian body temperature rhythm of body temperature with respect to vasospasm in Raynaud's syndrome and systemic sclerosis. The secondary objective is to determine environmental factors (e.g. temperature, clothing, physical activity) that influence vasospasm and/or systemic vasospasm and/or systemic sclerosis. The primary objective is a periodic change in temperature, in terms of the circadian rhythm, which can be linked to vasospasm by the thermal camera. Secondary endpoints are environmental factors that lead to Raynaud's symptomatology.

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