

# Shock-wave therapy successfully treats finger ulcers in scleroderma patients

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Extracorporeal shock-wave therapy at low energy levels showed promise as a new treatment for digital ulcers in patients with systemic sclerosis, or scleroderma, according to new research findings presented this week at the 2017 ACR/ARHP Annual Meeting in San Diego.

Systemic sclerosis, also called scleroderma, is a serious and rare autoimmune disease that affects the skin and other organs. Severe complications may include kidney disease, pulmonary arterial hypertension (PAH), lung inflammation or gastrointestinal problems.

Systemic sclerosis (SSc) patients often have Raynaud's phenomenon as a complication, which can cause digital skin ulcers. Treatments like immunosuppressants, vasodilators or anticoagulants are often ineffective for digital ulcers and are associated with high costs and significant side effects. Low-energy, extracorporeal shock-wave therapy (ESWT) is effective at stimulating growth factors and the formation of new blood vessels, and healing these skin wounds, so a group of researchers in Japan conducted a study to test the effectiveness of this therapy.

"Digital ulcers are a severe complication of SSc caused by microvascular impairment and persistent vasospasm associated with Raynaud's phenomenon. Several studies have shown that approximately 50 percent of SSc patients experience digital ulcers. Ten percent require continuous therapy, and one percent exhibit severe symptoms such as gangrene," said Tomonori Ishii, MD, a researcher at Tohoku University Hospital in Sendai, Japan and a lead author of this study. "In some cases, digital

ulcers cause severe scarring and lead to amputation. Although most of the small ulcers are localized to the fingertips, some large ulcers spread throughout the finger and lead to necrosis or progressive digital shortening. Even a small fingertip ulcer causes severe pain and restricts activities of daily living."

The study included 60 SSc patients with refractory digital ulcers who had no response to intravenous prostaglandin E1 therapy for at least four weeks. Thirty patients were treated with ESWT, while the other 30 patients were treated with currently available therapies. Patients in the ESWT group were allowed to continue their pre-study treatments as well. Patients were evaluated after eight weeks of therapy.

Results of the study showed a significant decrease in the number of ulcers in the ESWT group compared with the conventional [treatment](#) group (a mean of 4.47 versus 0.83, respectively) after eight weeks. In addition, 70 percent of the patients in the ESWT group experienced a decrease in the total number of their digital ulcers after eight weeks, compared to 26.7 percent of the patients in the conventional treatment group.

During the follow-up period, an average of 1.57 new ulcers formed in patients from the conventional treatment group, compared with 0.23 new ulcers for those treated with ESWT. The patients in the ESWT group reported no serious adverse events in association with the [therapy](#) during the eight-week study.

The researchers concluded treatment with ESWT is minimally invasive, well tolerated, does not require anesthesia and can result in clinically meaningful improvement for SSc patients with refractory digital ulcers.

"Low-energy ESWT may be a new approach to managing digital ulcers associated with SSc. ESWT has a strong and rapid effect for ulcer

healing. It also has potential and unexpected benefits. First, ESWT may be effective in treating the pathology. It aims to stimulate neovascularization and is not intended to dilate damaged vessels," said Dr. Ishii. "It is a non-pharmacological treatment that may avoid the adverse effects that are inevitable with medication. It can be used in patients with severe disease, including renal, cardiac, and respiratory failure, as well as gastrointestinal tract disturbances. Moreover, its safety may enable treatment repetition with efficacy. In addition to treating ulcers, ESWT may help eliminate pain, which is the most severe and persistent complaint of these [patients](#)."

Provided by American College of Rheumatology

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