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Breakthrough Treatment for Severe Frostbite Saves Limbs

New Interventional Radiology Treatment Reopens Arteries, Restores Blood Flow to Tissues

Washington, D.C. (March 17, 2008)—Using imaging to visualize areas lacking blood flow and deliver drugs via catheter, interventional radiologists are reopening recently frozen, clotted arteries with clot-busting and anti-spasmodic drugs. The people in a recent prospective trial had severely frostbitten hands and feet (with tissue frozen to the bone and damage occurring deep in muscles, tendons, nerves and blood vessels). Typically this leads to gangrene and loss of limbs. In severe frostbite, the blood vessels are affected and blood flow is blocked. After thawing and re-warming, small clots form. Spasm of the injured arteries further impedes flow to the smallest vessels of the limbs. The standard treatment for frostbite—typically involving re-warming the affected area and, in severe cases, amputation—hasn't changed for decades. Interventional radiologists used angiography, an X-ray exam of the arteries and veins, to confirm loss of blood flow to a patients hand or toes, then intra-arterial catheters to directly deliver drugs to dissolve the blood clots and relax the arteries' muscular walls. This treatment was significantly successful in preventing amputation and saving limbs, according to a study released today at the Society of Interventional Radiology's 33rd Annual Scientific Meeting.

"Previously severe frostbite was a one-way route to limb loss. This treatment is a significant improvement. We're opening arteries that are blocked so that tissues can heal and limbs can be salvaged. We were able to reopen even the smallest arteries, saving patients' fingers and toes," said George R. Edmonson, M.D., interventional radiologist with St. Paul Radiology in St. Paul, Minn.

According to Edmonson, severe frostbite or "freezeburn" looks like a second degree heat burn with large blisters, but it's actually body tissue that's been frozen and—in severe cases—dead, he said. "For half our patients who received the clot-busting drug Tenectaplase, this technique worked beautifully, saving all fingers, hands, toes and feet that otherwise would have been lost," said Edmonson, who has been treating an average of 6–10 frostbite patients each year for the past 10 years. "Overall, in about 80 percent of the cases, it significantly improved patients' outcomes. Within one to three days of treatment, we saw improvement," noted Edmonson, explaining that patients were followed for six weeks to assess their final outcomes.

In this small prospective trial, results from six frostbite patients, ages 18–65 years, who received Tenectaplase were compared with 11 individuals who had received Retaplase.

The trial was designed to see if the greater plasma stability of Tenectaplase would lead to better results. "With both groups, approximately 80 percent of the patients' affected limbs, fingers and toes responded with significant improvement. The treatment has been demonstrated to be safe and beneficial. We will continue research to improve and modify the protocols," noted Edmonson.

Abstract 52, "Intra-Arterial Thrombolytic Therapy for Limb Salvage in Severe Frostbite," can be found at <u>www.SIRmeeting.org</u>.

About Frostbite

Frostbite is damage to the skin and underlying tissues caused when individuals are exposed to cold temperatures for a prolonged period of time. While any part of the body may be affected, it is more likely to occur on the hands, feet, nose and ears. These body parts are often left uncovered and can freeze quickly.

With severe frostbite, blisters develop and damage occurs to deep structures such as tendons, muscles, nerves and bone. Damage is permanent and gangrene can follow, possibly requiring amputation of the affected body part.

The majority of cases of frostbite involve soldiers, cold weather rescuers, laborers working outside, the homeless, winter outdoor sports enthusiasts, individuals stranded by car accidents or car breakdowns in bad weather, those with alcohol or drug abuse problems—with most individuals unable or unwilling to remove themselves from the hazardous situation. "Vulnerable" populations—children, seniors and those with circulatory problems—are at greater risk for frostbite.

About the Society of Interventional Radiology

Interventional radiologists are physicians who specialize in minimally invasive, targeted treatments. They offer the most in-depth knowledge of the least invasive treatments available coupled with diagnostic and clinical experience across all specialties. They use X-ray, MRI and other imaging to advance a catheter in the body, usually in an artery, to treat at the source of the disease internally. As the inventors of angioplasty and the catheter-delivered stent, which were first used in the legs to treat peripheral arterial disease, interventional radiologists pioneered minimally invasive modern medicine.

Today many conditions that once required surgery can be treated less invasively by interventional radiologists. Interventional radiology treatments offer less risk, less pain and less recovery time compared to open surgery. Visit <u>www.SIRweb.org</u>.

Local interviews and medical images are available by contacting SIR's communications department at <u>mverrillo@SIRweb.org</u>.

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