Nerve Growth Factor Improves Healing of Pressure Ulcers of the Foot

What is the problem and what is known about it so far?
When patients are immobilized in bed, friction between the skin and the bed covers may damage the skin, particularly at contact points where there is a bony prominence like the anklebone or heel. Damaged skin may break down, forming an open sore (pressure ulcer). As pressure ulcers develop, they often lead to infections of the soft tissues and bones, complicating care and prolonging hospitalization. Pressure ulcers are difficult to treat.

Until recently, the only treatments available were local wound care (such as washing the ulcer with salt water or applying cleaning enzymes and protective coatings) or surgery. Recently, researchers have found that certain tissues of the body produce substances that promote healing by stimulating the growth of cells to replace those that have been damaged or lost. The first of these stimulating substances to be discovered was called nerve growth factor because it caused nerve cells to grow into damaged tissues. When researchers studied nerve growth factor further, they found that it also stimulated skin cells and other cells that helped repair damaged tissue.

Why did the researchers do this particular study?
To find out whether applying nerve growth factor to pressure ulcers could speed the healing process.

Who was studied?
36 nursing home patients with pressure ulcers of the foot.

How was the study done?
The size and severity of each patient’s pressure ulcer were measured before the patients entered the study. Patients were then divided into 2 groups of 18 patients each. Group assignments were made by chance so that one group was unlikely to differ in any important way from the other. Both groups received standard local wound care. Patients in one group (the treatment group) were also treated with nerve growth factor that was dissolved in salt water and dripped onto the surface of the ulcer every day. The other group (the control group) had only salt water dripped onto the ulcer. Neither the patients nor the doctors knew which liquid was being applied. The size and severity of the ulcers were reevaluated weekly for the next 6 weeks.

What did the researchers find?
After 6 weeks, the treatment group showed significantly faster healing of the ulcers than the control group. Pressure ulcers healed completely in 8 patients in the treatment group and in only 1 patient in the control group.

What were the limitations of the study?
None of the patients had diabetes or blood vessel disease, both of which are common in patients with pressure ulcers, so the researchers could not evaluate the effectiveness of nerve growth factor in patients with these complications.

What are the implications of the study?
Use of nerve growth factor may represent a significant advance in the treatment of pressure ulcers of the foot and may shorten the recovery process.