

# Protein, Calories Essential To Pressure Ulcer Healing

BY HEIDI SPLETE

ARLINGTON, VA. — It may not be the first tool that physicians think of, but nutrition can be a powerful one against pressure ulcers, dietitian Mary Ellen Posthauer told a meeting of the National Pressure Ulcer Advisory Panel.

"Please involve dietitians early on if you see people with pressure ulcers or those who are at high risk of developing pressure ulcers," said Ms. Posthauer of the company Supreme Care West in Evansville, Ill.

People with pressure ulcers are in a hypermetabolic condition, she explained. A small person with a pressure ulcer is probably pulling protein from his or her lean body tissue.

More research is needed on the impact of nutrition on wound healing in obese patients, Ms. Posthauer said. Patients with stage III or IV pressure ulcers should not be on restricted diets. Patients with pressure ulcers need to eat 30-35 kilocalories per kilogram of body weight a day, she said. "If the person doesn't eat the food, you aren't going to get wound healing."

Ms. Posthauer offered several tips for how to provide enough calories:

- ▶ Consider the individual's favorite foods and cultural preferences. The goal is to serve "foods that they are actually going to eat, not give to their tablemates."
- ▶ Offer variety. A chocolate milkshake is less attractive than usual when a person gets three a day.
- ▶ Use fortified foods, such as high-density cereal and pudding, or follow recipes for high-calorie, high-protein foods.
- ▶ Offer high-calorie, high-protein supplements, using trial and error to determine which one the patient prefers. Research has shown that offering a nutritional supplement between meals improves the acceptance of the supplement and mealtime food.

"There needs to be a team effort in following up to see that the food is being consumed," Ms. Posthauer emphasized. "Dietitians are great at developing menus and sending out food, but if nobody is eating it, we haven't achieved much."

Studies have shown that increased protein intake is associated with better healing of pressure ulcers, with a recommended daily intake of 1.25 to 1.5 g/kg of body weight. But it's important to monitor both healing rates and renal function in a person getting supplements and to adjust intake as needed, Ms. Posthauer said. "Monitor the healing, and if you aren't seeing results, try increasing the amount of protein."

Enteral nutrition is an option for some individuals, but only if it is monitored carefully, Ms. Posthauer said. When considering enteral nutrition, ask the individual and family members whether they understand the risks and benefits associated with this more invasive form of feeding. If individuals receive tube feeding, then the formula for the liquid being administered should be evaluated periodically to make sure that it is providing enough calories and protein to improve wound healing.

Research does not support the use of mega doses of vitamin C to enhance wound healing, but some evidence supports the use of zinc supplements if a deficiency exists in that mineral. Strive for a balanced diet and confirm a deficiency before adding any vitamin supplement, said Ms. Posthauer. Remember that many liquid calorie supplements meet the daily recommendations for most vitamins and minerals, so further additions may be unnecessary, she added.

Relatives may know which foods older kin prefer and may offer strategies to help elders get the calories they need for optimal wound healing.

Ms. Posthauer disclosed no financial conflicts relevant to her presentation. ■

# Stem Cells, Skin Substitute Heal Scleroderma Wounds

BY ROBERT FINN

SAN FRANCISCO — Chronic wounds due to scleroderma responded well to a combination of mesenchymal stem cells and bilayer bioengineered skin, in a study of 12 patients followed for up to 6 months.

Four wounds completely healed, and the others decreased in size enough that patients' quality of life was improved, Dr. Vincent Falanga

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said in a press briefing at the annual meeting of the American Academy of Dermatology.

He and his associates harvested the patients' own stem cells from a small amount of bone marrow taken from the hip. And they applied the stem cells to the wound with an innovative fibrin spray system that had not been used before in humans.

Using a pressurized double-barrel syringe, they placed the cells in fibrinogen in one barrel and in a thrombin solution in the other. This produced a fine spray, spreading the cells evenly over the wound and simultaneously combining the fibrinogen and thrombin to form fibrin, which glued the cells to the exposed wound tissue, said Dr. Falanga of Boston University and Roger Williams Medical Center, Providence, R.I.

In prior studies, Dr. Falanga determined that the spray alone would not

be enough to encourage the stem cells to differentiate into skin cells. To teach the stem cells to become skin cells, he covered the spray with living bioengineered skin substitute, specifically a product from Organogenesis Inc. called Apligraf that contains two layers of living cells, one of fibroblasts and one of keratinocytes.

Dr. Falanga gave each patient three treatments, the maximum permitted by the Food and Drug Administration. He said that he thinks the patients would do even better with additional treatments and hopes to receive approval for this as his studies continue.

Dr. Falanga said he found it necessary to use quite a large number of stem cells, 1.5 million to 2 million/cm<sup>2</sup>. "What has surprised me is the number of cells required per surface area of the wound is rather substantial," he said in an interview. "And also what has surprised me has been the fact that it might be that stem cells alone may not be the answer to the problem. I think there is a feeling out there that stem cells are the answer to everything. I believe that a lot of effort has to be spent in how we direct the cells."

He continued, "I think that this is a lesson that's going to be learned when we go into other areas of medicine. Whether it's skin, brain, spinal cord, we have to have some methods whereby we impart upon the stem cells a didactic component, a direction we want them to go to."

Dr. Falanga disclosed that he is a former consultant to the company Organogenesis. ■

# Pressure Ulcers on the Heel Require Strict Intervention

BY HEIDI SPLETE

ARLINGTON, VA. — Pressure ulcers on the heels present unique challenges, but proactive care can go a long way in preventing these wounds in immobile, elderly people, said Catherine Ratliff, Ph.D., at a meeting of the National Pressure Ulcer Advisory Panel.

The heels are especially sensitive to pressure because there's not much subcutaneous fat or tissue covering the bone in elderly people, explained Dr. Ratliff of the University of Virginia, Charlottesville.

"As we age, the shock absorbency of the foot decreases, which increases the risk of developing a heel pressure ulcer," she said. Other factors that can increase risk with age include

dry skin, leg spasms, and Parkinson's disease, which lead some people to dig their heels in the bed when they attempt to move, said Dr. Ratliff.

She recommended that caregivers assess four factors to determine an individual's risk for heel pressure ulcers: age older than 70 years, diagnosis of diabetes, decreased mental status, and lack of movement in the legs and feet. Also, consider whether individuals are ambulatory, walk with assistance, or are confined to bed, she said.

Caregivers should take some precautions to prevent heel pressure ulcers even in individuals who are at low risk, Dr. Ratliff said. Check the circulation in the affected area, check whether the skin is warm or cool to the touch, examine the feet for red-

ness, and apply moisturizer to the heels. Encourage individuals to get out of bed at least three times a day if possible. If that doesn't happen, consider a pressure-redistributing mattress.

Individuals who are at higher risk, or those who already have a heel pressure ulcer, require stricter interventions, she said. Assess the patient and apply moisturizers more often, work hard to get the individual mobile, and perhaps use devices that take pressure off the heels.

Whether devices such as foam- or air-filled boots are used, the first step in caring for any pressure ulcer is to take the pressure off, said Dr. Ratliff. "It's important to go back and continually reassess the pressure situation." For instance, blankets or pillows used as cushions can

compress over time, she said.

In cases of stage I heel pressure ulcers, caregivers should assess whether shear is a factor and, if so, use moisturizers to reduce friction. It's important to regularly remove any dressing to monitor the ulcer, she added. Other tips include keeping the area warm and assessing whether the patient's bed and footwear might be increasing risk.

Blisters are a concern with stage II pressure ulcers on the heels, said Dr. Ratliff. If a blister pops, trim the surrounding skin, she advised.

For a stage III pressure ulcer on the heel, it's important to monitor the area for signs of infection and, if it develops, to treat with antimicrobials.

"The wound will not heal as long as there is any type of dead

slough present," Dr. Ratliff said. Unfortunately, circulation is an issue in many patients with pressure ulcers, especially older adults. If eschar is soft, it needs to come off, she said. Sometimes hard eschar will lift up by itself, and then it can be trimmed. But don't debride stable, hard heel eschar, she emphasized, because individuals with stable heel eschar have poor perfusion in their legs.

If using any device to relieve pressure on the heels, caregivers should check it periodically to make sure it isn't too tight. Dr. Ratliff added that although some beds have specialized designs meant to reduce pressure on the heels, "raising the bed changes the pressure relief for the heel."

Dr. Ratliff disclosed no conflicts related to her talk. ■