Noncontact, Low-Frequency Ultrasound Therapy* for Infected Pressure Ulcers in a Patient with Multiple Comorbidities

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**Purpose**
Infection and comorbidity contribute to wound chronicity. This case report describes the course and outcomes of noncontact, low-frequency ultrasound therapy* (i.e. noncontact ultrasound) to assist with healing of chronic, infected pressure ulcers in an elderly patient with multiple comorbidities.

**Background**
Noncontact ultrasound delivers acoustic pressure to wound tissues via a fine mist of sterile saline. Randomized and nonrandomized studies, primarily involving lower-extremity ulcers, have demonstrated faster healing and greater proportion of wounds healed when APWT is added to conventional wound care. An in-vitro experiment also identified a potential bactericidal effect of this novel ultrasound therapy.

**Case History**
This 76-year-old Caucasian woman presented with two pressure ulcers of 2 to 3 months duration: a partial- and full-thickness ulcer of the sacrum and a full-thickness ulcer of the occipital area of the head. Her medical history includes obesity (BMI: 31), ovariectomy, myocardial infarction, coronary artery disease, left ventricular thrombus, chronic obstructive pulmonary disease, respiratory failure, sputum infection, apical aneurysm, cataract surgery, cholecystectomy, colostomy, and bowel perforation leading to ileostomy. Her medications include a nutritional supplement and megestrol acetate.

**Treatment and Outcomes**

**Sacral Wound**
On admission, the sacral wound was entirely covered with slough and eschar. It was infected with *Enterobacter aerogenes* and *Proteus mirabilis*. Periwound tissue was fragile and friable. Drainage was moderate serosanguineous. Initial treatment was enzymatic debridement and wet-to-dry dressings. From Sept. 26 to Nov. 19, noncontact ultrasound was administered 3 times/week for 10 min/treatment with silver gel and dry dressings. After 8 weeks of noncontact ultrasound (with negative pressure wound therapy for the last 2 weeks), 100% slough and eschar was replaced with 97% granulation tissue and wound area was reduced by 74%. See table and photos below. Silver gel and dry dressing once a day were continued.

**Occipital Wound**
On admission, the head wound was covered with eschar and being treated with dry dressing and pressure relief. Periwound tissue was fragile and friable. Drainage was none to minimal serousanguineous. On Sept. 19, we initiated noncontact ultrasound (3 times/week for 5 min/treatment) with hydrogel and dry dressing. After 7 weeks of noncontact ultrasound therapy (discontinued Nov. 7) and an additional 3 weeks of hydrogel or silver gel and gauze, 90% granulation was achieved. Wound area had decreased by 75%. See table and photos below. Hydrogel and dry dressing once a day were continued.

**Summary**
Healing of these chronic pressure ulcers was complicated by extensive slough and eschar, infection, and medical fragility. Substantial improvements in wound size and tissue quality were observed with 7 to 8 weeks of noncontact ultrasound therapy added to moist wound-healing dressings.

On Nov. 29, the patient was transferred to a nursing home because she no longer required an acute care setting. Unfortunately, she died at the nursing home and no further information about her wounds is available.

**References**

* MIST Therapy, Celleration, Eden Prairie, Minnesota

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