Buruli Ulcer: It's Impact and Treatment Worldwide

Terry Treadwell, MD, FACS John Macdonald, MD, FACS

World Alliance for Wound and Lymphedema Care Geneva, Switzerland

Background

Buruli ulcer, a devastating disease first described in 1897 by Sir Albert Cook in Uganda, Africa, is caused by *Mycobacterium* ulcerans and is seen in more than 30 mostly under-resourced, countries world-wide. (1) More than 70% of the patients affected are children under age 16 (2) with 90% of the ulcers being manifested on the limbs. (1) The ulceration caused by the microorganism is painless due to the cytotoxic and immunosuppressive properties of the bacterial toxin, mycolactone. Development of these ulcers is accompanied by marked edema of the affected extremity, and up to 15% of the skin surface can be involved in the ulcerative process. (3) Unfortunately these ulcerative lesions can become very large before treatment is sought because of lack of access to care, lack of funds, superstitious beliefs about the disease, and the stigma of the disease. (4) Current treatment entails administration of two antibiotics (Rifampin and Streptomycin) for 8 weeks followed by excision of the ulcerated area and skin grafting. Unfortunately, 20% of patients have no response to this therapy. Complications of the disease and its treatment can be seen in up to 24.5% of patients and can include amputation, joint contractures, and death. (5) In an attempt to improve the healing of this devastating disease and to avoid some of the long standing complications, a clinical trial utilizing good, basic wound care techniques and dressings and compression therapy has been instituted in Ghana, Africa under the auspices of the World Health Organization.

World Health Organization, Fact Sheet #199, Revised March, 2007. Accessed at http://www.who.int/mediacentre/factsheets/fs199/en

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Buruli Ulcer

Edematous Form of Buruli Ulcer

Photo courtesy of Dr K. Asiedu

Buruli Ulcer of Leg

Healed Buruli Ulcer with Contracture

Buruli Ulcer with Edema

Economic Impact of Buruli Ulcer in Ghana

Average hospital stay for treatment of Buruli Ulcer—102 days

Annual income for farm laborer - $200

Average Daily income for farm laborer - $1

Average Direct cost to treat - $139.63 in 1996

Average Indirect cost to treat - $549.49 (all patients have to have a relative in attendance to help with care and to provide food)

Total cost for treatment - $658.74 in 1996

Direct costs = 30%

Indirect costs = 70%

Treatment of Patients

All patients were treated with Rifampin and Streptomycin for 8 weeks. Historical wound care had been to wash the wound with water and apply Betadine-soaked gauze dressings. Because of the need to provide moist wound healing and treatment of the edema, each patient in our evaluation was treated with vaseline gauze, Drawtex hydroconductive dressings, and short stretch compression therapy. The Drawtex dressing was utilized because of its superior wicking action to move wound fluid away from the wound surface and to facilitate autolytic debridement of the wound. Short-stretch compression bandages were utilized to reduce the marked edema seen in the extremities of patients with this disease. Dressings were changed 3 times per week by clinic personnel. Wounds were evaluated weekly for 8 weeks.A total of 20 patients are to be enrolled. We report on the first 8 patients as an interim report.

Interim Results

Change in % Granulation Tissue	<25% to 75% 2	<25% to 100% 6	
Change in Drainage	Large to Medium 1	Large to Minimal 4	Unchanged 3
Change in Wound Size	Increased 3	Decreased 5	

Buruli Ulcer of Thigh Before and After 8 Weeks Compression and Drawtex Therapy

Buruli Ulcer of Foot Before and After 8 Weeks of Compression and Drawtex Therapy

Conclusions

Buruli Ulcer is a devastating disease suffered by many in Sub-Saharan Africa many of whom are children. The toll of the disease both physically and financially is devastating in these poorly resourced countries. The use of the standard double antibiotic therapy combined with good local wound care consisting of compression therapy and Drawtex seems to be an excellent approach to improving the treatment of this disease.