PRELIMINARY STUDIES ON DÉBRIDEMENT AND SCARRING OF MYCOBACTERIUM ULCERANS INFECTIONS USING NATURAL HYDRATED ALUMINUM SILICATES

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Devastating Buruli ulcers are caused by *Mycobacterium Ulcerans*'s necrotic toxin. When arriving at the hospital, the patient may present a small skin opening most often surrounded by a large edema taking an entire arm or leg, the extent of which usually reflects the actual extent of the infection. Common treatment is surgical débridement: the skin covering the entire infected zone is removed such as to gain access to necrotic tissues and scrape them off. A large excision is made, muscles, tendons and articulations are exposed and cleaned up and then new skin from the patient is grafted over the lesion. Healing is fastidious, keloids and retractions occur quite frequently, articulations end up twisted and movements are restricted. Nosocomial infections and new attacks of mycobacteria infestation (recurrences) result in more functional disability, and sometimes end up with amputation.

We have experimented a new protocol at the Zouan-Hounien center, Ivory Coast, during the year 2001 (January 2001 to January 2002), and have successfully treated a hundred patients. We are here today to communicate our results.

There are two distinct phases in that treatment: first the débridement phase, and then the scarring phase.

The first phase is aimed at neutralizing *Mycobacterium Ulcerans* and toxins, removing necrotic tissues and cleansing the derm, hypoderm and subcutaneous tissues. We manage to achieve this result without the help of surgery. The immediate advantage is that every bit of healthy tissues is preserved to participate in the scarring process. Moreover, tissue regeneration is stimulated to such an extent that quite often skin grafts don't have to be performed.

Débridement is achieved with natural hydrated aluminum silicates (illite and smectite) applied in direct contact with the lesions. These ion-exchanging dressings suck-away all necrotic tissues, and drain them out through the opening. The minerals are applied in thick packs and renewed up to three times a day. A thorough washing precedes every new dressing, with water first, and then with a 10% solution of the mineral. We continue on with this protocol until the arm or leg is ridden of the infectants, and the solution injected far under the skin returns serous and odorless. This cleansing phase usually lasts five to six days. Then the healthy skin would spontaneously start to reactivate and gradually stick to the underlying muscle, resulting usually in itching. A purple sealing edge would appear all around the wound that testifies of the adhesion to underlying structures. When the purple edge forms a uniform seal, the « scarring protocol » (second phase) is initiated.

We noticed that if the purple edge cannot consolidate and expand well, thus leaving unsealed edges, it testifies of the need for a new discharge of mortified tissues; subsequently, a second series of thick stench fluids (or "deep throat spit") come out within a few days, probably originating from a remote nest of mycobacteria. After this second spontaneous discharge has completed, the purple edge completes rapidly the sealing around the wound, and general scarring would then progress normally. This "secondary" discharge is probably the success factor that prevents later infection recurrence.

In the second phase, the wound is cleaned solely with physiologic serum between applications. Initially, dressings are also made with natural aluminum silicates which maintain ideal conditions for vigorous tissue growth and for preventing dreaded retractions. Cell proliferation is impressive, but don't worry, at the right time derm granulations will subside and new skin will start to cover the opening. Shea butter dressings are progressively introduced adjacent to the natural aluminum silicates dressings in order to bring essential cell nutrient supplements (mostly A2 vitamin) to promote skin regeneration and better texture. The entire lesion becomes covered with a regular and healthy scar which progressively darkens (due to melanin) and becomes vascularized. What's totally new about this scarring treatment is that the new skin has a good and supple texture, free from retractions and keloids. Moreover, articulation mobility and functionality is completely preserved. Only adipocytes are missing. Skin graft is indeed of great help to speed up the scarring process when the lesion area is extensive.

This protocol was found to be totally successful with primo-infection cases, but significantly more difficult with infection recurrences. As damages to functional limbs and articulations are minimized, mobility impairment is minimized.

Let us conclude with this proposal: **this protocol should be supplemented with a two year study in Zouan-Hounien, and ideally in several other places, in order to confirm or infirm its practicability and usefulness.** Material and supplies cost is minimal, therefore local nurses may be trained by qualified regional supervising doctors. We must give it a try: remember, mycobacterium ulcerans infection is a dreadful disease affecting mostly children and young adults, resulting in disabling scars or amputation, gloomily impairing their family and economic future.