

# Preliminary Studies of Débridement using Clay Minerals on *Mycobacterium Ulcerans* Infections and their Ramifications

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## **I. Introduction**

This document is not an official publication, but a collection of reflections and observations made by the author after spending one year at proximity of patients afflicted with the dreaded Buruli ulcer or *mycobacterium ulcerans* infection. As the saying goes, things that are told in the simplest manner have the best chance of success...

### **1. Motivation**

Since ancient times, clay minerals have been used for healing purposes. Many types of animals in the Amazonian forest appear to neutralize the toxic character of the vegetation they ingest by periodically eating huge quantities of clay. Nowadays, in Europe, clay is frequently used to treat digestive pathologies.

Personally, for more than 45 years, I have been using green illite clay for medical treatment on myself, my family and friends, as well as in some dispensaries in Equatorial Guinea and Ivory Coast.

Very large lesions are predominantly seen only in developing countries, and in so-called “orphan” types of disease. In Ivory Coast about 10 years ago, in dispensaries located in districts of precarious housing, I had seen some strange ulcers. In popular language, these lesions were called “*crocros*” or “*endless ulcers*”. I treated them with illite clay that achieved miraculous cures. The children talked amongst themselves about this cure and came to us from afar for treatment.

### **2. The Anti Buruli Ulcer Centre in Zouan-Hounien**

I became aware of this “plague” only recently. In October 2000, I first met Father Marc, founder and Director of the Buruli Ulcer Centre in Zouan-Hounien, who then asked me to try this method of treatment with clay minerals in his Centre, in which about one hundred patients were being treated for Buruli ulcer. This Centre is located in Zouan-Hounien, Ivory Coast, about 700 Km west of Abidjan.

This is how these preliminary studies on the effects of clay minerals on *mycobacterium ulcerans* infections were initiated. They started in January 2001 at the Centre in Zouan-Hounien.

### **3. March 2001 meeting in Geneva**

I attended as an observer the March 2001 meeting in Geneva of *WHO Specialist Group on Buruli Ulcer*, in order to gather information on the subject.

#### **4. Purpose of the Studies**

The purpose of my studies was the following:

- a) To demonstrate the beneficial effects of the use of clay minerals on this disease,
- b) To perfect a treatment regimen,
- c) To communicate the results together with an extensive and freely available digital images library,
- d) To present the results in March 2002 in Geneva to the meeting of *WHO Specialist Group on Buruli Ulcer*.

#### **5. Financing**

These studies were all carried out under my direction in the Buruli Ulcer Centre at Zouan-Hounien. The materials and apparatus required (including automatic hematology analyzer, automatic reflectance meter, centrifuge, Zeiss microscope, etc), travel costs (road and air), computer equipment, supplies for wound dressing as well as 6 tons of dry clay minerals crushed into powder, have been entirely financed by my family and friends.

## **II. The method of treatment**

### **1. Types of clay minerals**

Two types of clay minerals were used in these studies:

- Green illite
- Montmorillonite

These powdered clay minerals are imported from France. Each consignment comes with an analysis report issued by the *Hygiene and Research in Public Health Laboratory of the H. Poincaré University, NANCY I*, which certifies the total absence of microbiological contamination in the product.

### **2. Method of treatment**

- a) On admission, all patients are given anti-parasite treatment as well as food highly enriched in proteins and supplemented with iron.
- b) I work in clean but not sterile conditions, with great perseverance and regularity, using simple and inexpensive equipment.
- c) The previous day, the dry clay is hydrated in glass (never metal) salad bowls. It is mixed with water coming from a lab tested well and is made up into a paste.
- d) On the following morning, the clay is deposited directly to the infected parts, extending 10 to 30 cm beyond the edges of the lesion, using wooden spoons or spatula (never metal), forming a 2 cm thick layer. It is essential not to compact the applied clay pack.
- e) The clay packs are renewed at least once a day, after cleaning the ulcer by rinsing it with running water coming from the well. In severe “blazing” cases, the clay packs may need to be changed up to three times a day.
- f) Using a squeeze bottle filled with clay water (about 10% of clay in volume), a jet of clay water is directed under the undermined skin at the edges of the ulcer. At the beginning of treatment, the fluid retrieved from these washings contains decomposing adipocytes. After repeated washings,

the retrieved fluid becomes clean and serous (watery). In some cases (soft oedema), the area of the undermined skin may involve the entire limb. We then have to ensure that the clay water reaches the limits of the undermined areas by positioning the limb, whenever possible, in such a way that gravity facilitates deep penetration of the clay water; gentle massages do help. This is a very time-consuming procedure. When the infected areas have become very clean, the skin will stick again to the underlying tissues. In one girl patient, we have achieved reattachment of the skin (dermis and hypodermis) extending 40 cm over her arm.

- g) We change over from illite to montmorillonite clay at a certain stage of the lesion débridement episode. However, in some cases, in order to obtain a combined effect, we use both kinds of clay at the same time, one beside the other.
- h) Once the ulcer is clean, it is no longer washed with well water but with physiologic saline.
- i) Over the lesion's granulating tissues, we place gauze dressings impregnated with clay water (about 10% of clay in volume) in order to keep the lesion clean.
- j) When the purple-colored scarring edge is **uniformly** established all around the wound, we progress to the scarring procedure that will be described in a separate document.

### III. Results and Comments

Very quickly, the therapeutic properties of clay minerals that I had recognized for a long time were once more demonstrated, **even** on *mycobacterium ulcerans* infections; I was totally amazed!... Not being an expert in this disease, I had anticipated that the clay treatment might only be effective in dealing with the secondary infection. I had never envisioned that it might be so effective in attacking the mycobacterium itself.

I reviewed the available literature and attended the March 2001 WHO meeting in Geneva as an observer... But nothing is better than one's own experience, at the side of the patient, to begin to understand what you are dealing with. At this stage, reading is very valuable and it becomes much more constructive as it allows comparison of one's own results with what has been achieved elsewhere, and provides explanations. Nevertheless, it is obvious that the behavior of the mycobacterium, as observed over several months in hundreds of patients, has not yet been described in medical literature.

When you have it in front of you, the situation is not so simple, because this mycobacterium is vicious, artful, tough, full of surprises, and biologically primary as it reacts and vigorously regenerates. It has an extraordinary ability to survive. In addition, the evolution of *mycobacterium ulcerans* infection cannot be predicted from the state of the infection when the patient is admitted to hospital, but depends on the **particular reaction of individuals**.

I undertook to remove the bandages myself in order to check it and better observe it... And yet, it constantly surprises me. I follow its actions in the development of the ulcers, without always being able to predict all its reactions. Seeing, with your own eyes, the débridement of the ulcer while it is taking place, in all its phases, is very enlightening, particularly when accompanied by regeneration of tissue in other areas of the ulcer (a phenomenon which happens frequently with this method of treatment). **Clay respects living tissues and stimulates their regeneration**, which is one of its utmost qualities.

When applying powdered clay minerals hydrated with water to successive evolution stages of the *mycobacterium ulcerans* infection, I have been able to observe spectacular results, clearly visible on the digital photographs that were taken during treatment. The following part of this document contains a detailed presentation of the results achieved in the treatment of the infection with clay, in terms of:

1. Rapid resolution of oedema
2. Action on nodules
3. Action on plaques
4. Powerful but non-aggressive cleaning action on the ulcer and on satellite lesions
5. Absorption of foul odors
6. Neutralization of mycobacterium and its toxins
7. Expulsion of “ramifications” (?)
8. Absorption effect via the lymphatic system
9. Action on severe “blazing” cases
10. Action on recurrences
11. Transition from treatment with illite to treatment with montmorillonite
12. Role of water
13. Absence of hemorrhage
14. Granulation tissue growth
15. The purple-colored scarring edge
16. Scarring
17. Risk of dissemination via the bloodstream
18. Testing for the HIV virus

Generally speaking, if the ulcer is recent, débridement is rapid from the very beginning of the treatment. On the contrary, in long-standing infections, new ulcers may burst in the early stages.

### **1. Rapid resorption of oedema**

Treatment with clay results in rapid and spectacular resorption of oedema (in 2 to 3 days, sometimes less).

### **2. Action on nodules**

Clay has an effect on nodules, sometimes resulting in their disappearance, sometimes by stimulating them to burst; they then follow the same evolution process as the ulcer.

### **3. Action on plaques**

Clay acts on plaques by achieving a full débridement. In fact, it appears that, as soon as clay packs are applied, the mycobacterium is activated again and is stimulated. This is a painful stage, psychologically speaking for the patient, who sees the ulcer appear, spread, then burst, producing purulent matter with the foul odor of “rotten cassava” (as described by the patients themselves).

#### 4. **Vigorous but non-aggressive débridement of ulcer and its satellite ulcers**

It is important to distinguish between “satellite” ulcers and “ramified” ulcers. Satellite ulcers occur around the initial ulcer and result in an enlargement of the lesion; ramified nodules can arise anywhere at a distance from the initial ulcer and may break out to form a new ulcer.

The clay treatment activates a vigorous (although not over-aggressive) débridement of the ulcer and its satellite ulcers, removing contaminated tissues, no longer blood vascularized tissues and necrotic tissues without affecting healthy tissues. This results in a lesion with irregular edges and occasionally with islets of healthy dermis in the centre of the ulcer (which are of considerable value subsequently).

This non-surgical débridement phase (also known as lesion trimming) to decontaminate the ulcer may appear prolonged compared with surgery, but it is crucial. This treatment phase is always disappointing, never gratifying, but it won't tolerate imperfection. It is essential to explain to the patient the nature of the different phases of the débridement episode.

#### 5. **Absorption of foul odors**

After a few applications, thanks to the clay's exceptional absorptive properties, the stench of “rotten cassava” which characterizes *mycobacterium ulcerans* infections is eliminated. (Thank God!)

#### 6. **Neutralization of mycobacterium ulcerans and its toxins**

I will not expand on the effects of *mycobacterium ulcerans*' toxins, which, as we know, result in the destruction of adipocytes. The latter, unfortunately, are never renewed, making the scarring process more difficult.

Clay absorbs toxins and decomposed adipocytes without difficulty. In some long established cases, this takes time, and patience and persistence are needed. The result is worth the effort and the long wait.

#### 7. **Expulsion of “ramifications”**

On granulating and apparently clean ulcers, clay, thanks to its exceptional absorbing properties, succeeds in “spitting-out” what I believe to be “ramifications”. The expelled blackened necrotic matter is accompanied by the same odor of “rotten cassava” mentioned previously. This event is very painful for the patient, comparable to the pains of childbirth.

This is an astonishing phenomenon which leaves new nursing staff recruits totally speechless...

Analysis of samples of this black matter confirms the presence of the BAAR (alcohol-acid-fast bacilli). There is little more I could say on this subject because our laboratory is brand new, equipped with state-of-the-art equipment, but unfortunately we do not have, as yet, skilled staff available to operate it.

The expulsion phenomenon is often accompanied by a deterioration of the patient's general condition, occasionally triggering an outbreak of malaria, probably as a result of immuno-deficiency. In such cases, the malaria is treated by the Centre's medical staff (after confirmation by laboratory testing). Alternatively and according to the patient's general condition, antibiotic treatment may be given. If the child is otherwise well, no medical treatment will be needed, although plenty of cuddles and sweeties are welcome!

This expulsion episode doesn't last long, only a few days, but it can recur several times, fortunately with diminishing severity. During this period, the clay packs have to be replaced up to 3 times a day. When you hold the “beast's tail”, you don't let it go!

At the end of the expulsion episode, the patients start smiling and the children become cheerful again.

The expulsion, as I described it, can occur when the lesion is clean and “good-looking” (even sometimes

when the staff is considering skin-grafting), while still being controlled with illite or montmorillonite (gauze dressings impregnated with clay water and/or clay packs around the lesion). This phenomenon is frequently observed in the course of patients' treatment.

### **8. Absorption effect via the lymphatic system**

I have personally observed that any alien matter or matter that became alien, such as decomposed adipocytes, mycobacteria, thorns, even small stones or pieces of metal pins (observed lots of times) are attracted by clay. Clay acts as a magnet to draw out these foreign substances. Clay is smart; it knows how to "*drive the wolves out of the wood*".

I can only think that this phenomenon must involve the lymphatic system; how else can we explain this expulsion of matter laden with mycobacteria and decomposed adipocytes, which are expelled out from the centre or from on the edge of a perfectly "clean" lesion? Where do they come from? The episode lasting only two or three days, is this possibly the expulsion of a distant ramification of the initial ulcer?

We are amazed by this demonstration of the potency of this natural clay and we are always astonished when witnessing the demise of our enemy (or so we hope). We still have a lot to learn about this infection!

### **9. Effect on severe "blazing" cases**

Concerning this phenomenon, we have no real understanding of what is going on. The patient speaks about a mere itchy pimple or boil, which did not really hurt and that appeared only 3 to 6 weeks earlier. Two of those cases arrived at the "Oasis" Hospital of the Sisters of Mother Theresa in Abidjan (in the town centre), where the severe cases of HIV are treated. They were treated for a few days with illite clay packs (following the method I had taught them) while waiting to be picked up by the ambulance from our Centre. Arms and legs sections were torn into shreds, as if lacerated or bitten by a vicious dog, and the odor was atrociously foul (real stench). These cases were first infection cases, not recurrences. How can such a quick and severe outbreak of the disease be explained?

The HIV tests on both patients were negative. In these two cases, clay has proved very effective, and this from the very beginning of the treatment. As I write this, both patients are ready to go back home in Abidjan (2 months for the first one after admission, and 3 months for the second one).

### **10. Effect on recurrences**

Among the patients admitted at the Centre that I have personally examined, what struck me most is the high proportion of recurrences. Recurrent cases are considerably more resistant than first infection cases; ulcers emerge from under the scars hence dissolving them and even at times totally lifting grafted skin.

This set my mind thinking, and I pictured the *mycobacterium* as a kind of hydra with tentacles invading the body through the lymphatic system, clutching at any part and promoting the formation of new nodules. When you use surgery and cut its head, this vicious hydra has the power to regenerate itself from its disseminated tentacles. The tentacles are likely the origin of new nodules. These ulcers burst where you least expect them, more fiercely so as the "beast has been disturbed" and the human terrain it infects suits it so well. It can nourish itself, prosper and multiply comfortably as the human body is the ideal host... This became the turning point whereby I understood that it was necessary to do more than simply place the clay on the lesion itself, by "attacking" both above and below the lesion with a thick and far-reaching layer of clay, unlike what I would normally do on a sore, a varicose ulcer or a burn. The beast must be bullied, drawn out, absorbed and digested.

### **11. Transition from treatment with illite to treatment with montmorillonite**

During the débridement phase of the ulcer, the observation of the appearance of "filaments" of coagulated blood on the lesion, does warn us that thromboses are receding and that we must stop using green illite clay which is too absorptive and we must start using montmorillonite clay instead.

Montmorillonite clay which has excellent adsorption properties and has a greater transfer of ions than illite clay, re-mineralizes, detoxifies and promotes healing. Montmorillonite stimulates tissue regeneration and wound healing.

## **12. The role of water**

I have no knowledge of which element in the clay is responsible for its active therapeutic properties; however, I discern that “dry” clay has no action at all, while when hydrated with water, its properties develop and become activated. We know already that water is a key factor, that is, an ideal transport medium that infiltrates everywhere, consequently enabling elements to act. Water almost certainly has other properties (to be exposed in a future essay).

## **13. Absence of hemorrhage**

There is no bleeding during débridement using clay; we only see small filaments of coagulated blood when the thrombosis stops.

## **14. Granulation tissue growth**

Extreme care is needed during the granulation tissue growth phase. It is absolutely crucial to prevent any damage to the granulation tissue and ensure it remains intact, avoiding any aggression by antiseptics and by removal of dressings insufficiently soaked with saline serum or removed too quickly. Again this phase is crucial and negligence is not permissible. Any bleeding, no matter how small, will warn us that we have made a mistake and have damaged a precious marvel... When we reach this phase, we start using “home-made” shea butter dressings (our shea butter comes from a laboratory in Burkina Faso).

## **15. The purple-colored edge**

After the expulsion episode, scarring begins. Nevertheless, as long as the little “purple edge” which appears on the lesion’s edges is not uniform on its entire perimeter, ANYTHING can still happen...

## **16. Scarring**

Following ulcer débridement and lesion cleaning using clay packs and clay water dressings, we enter the scarring phase wherein we benefit of clay’s remarkable healing properties. For this, we use clay water dressings together with adjacent shea butter dressings or alternatively “Tulle Gras Lumière” dressings made with “Balm of Peru” combined with Vaseline (petroleum jelly). The results of the work on the scarring phase are documented in a separate document.

Scarring may be accelerated by surgery. Surgery is valuable above all when the lesions are substantially large and cannot scar quickly on their own.

## **17. Risk of dissemination via the bloodstream**

We must bear in mind that *mycobacterium ulcerans* infection is an infectious disease and as such, it cannot be cured by surgery; this statement was uttered by an eminent surgery Professor who will recognize himself... It may be difficult, under particular circumstances, to question dogma which one has been taught!

## **18. Testing for the HIV virus**

In extremely severe cases like those mentioned above in this document, rapid tests for the HIV virus were carried out; results were negative.

To my knowledge, we have had only two HIV positive patients affected by Buruli ulcer; a woman who has since died and a young man who is still undergoing treatment as of this writing.

## IV. CONCLUSIONS

The method presented, inherited from ancestral practices but with proven effectiveness and classified as traditional medicine, is a powerful demonstration of the force of nature and its healing power.

### 1. **Advantages compared with the current methods**

The advantages of using clay minerals to achieve débridement are the following:

- a. **Neutralization** of *mycobacterium ulcerans* and its toxins
- b. Sparing of healthy tissue
- c. Accelerate granulation tissue growth
- d. Avoid fear of surgery
- e. Avoid general anesthesia and its well-know risks
- f. Avoid hemorrhage
- g. Eliminate the need for blood transfusion and its associated risks
- h. Lessen the risk of contamination, as well as any further sepsis risk
- i. Substantial pain reduction when dressing and undressing the wound
- j. Lower treatment costs (clay is very inexpensive; so is our home-made equipment)

### 2. **Disadvantages of the method described**

- a. Anxiety for the patient who sees his ulcer grow and substantial matter ooze out during the débridement phase; therefore the patient must definitely be made aware of what is going on and what is about to happen (fortunately, very often, patients near to be discharged, can provide reassurance).
- b. The substantial weight of clay packs, sometime in the order of several kilograms, especially if the lesion has spread to the entire arm or leg in an adult patient.
- c. It is anticipated that modern medicine will receive the results of this studies with unreserved skepticism. The therapeutic benefits of physical application of hydrated clay minerals have never been thoroughly researched; consequently, to my knowledge, the active components which could explain the effectiveness on *mycobacterium ulcerans* infections have not been identified.

### 3. **Therapeutic properties of clay minerals**

My research has been focused on the débridement properties of clay minerals on *mycobacterium ulcerans* infections and their ramifications. If only we could confirm the absorptive action of clay on *mycobacterium ulcerans*, then, possibly, we could prevent the recurrences of the disease, which are so painful for the patient and discouraging for the medical staff. Moreover, we might be able to prevent the severe associated **osteomyelitis** for which there is, as yet, no really effective treatment.

#### **4. Infection recurrence**

Infection recurrences or relapses are not unavoidable; I am convinced that these preliminary studies could be improved by increasing the frequency of clay pack application and by nursing done by skilled, dependable, motivated, ingenious, meticulous, and determined staff.

#### **5. Early detection**

Unfortunately most patients have reached an advanced stage of infection when they are admitted to the Centre.

#### **6. Bringing-in pinpointed cases**

The patients under treatment in our Centre often tell us of other cases in their village. We have launched an information campaign in order to prepare for the visit of our Centre ambulance to pick people up. Beforehand, Father Jean-Louis, Director of the Catholic Mission, informs the village Chiefs by letter, so that “messengers” can be sent to the campsites in advance to inform the inhabitants about our visit. Nevertheless, we have never been able to bring-in the pinpointed cases, even though the ambulance, board, lodging and medical care during treatment are free of charge. The Village Chief, unfortunately, lacks the authority to force the infected individuals to undergo treatment and cannot even force them come out of their huts. Making these trips, over a range of about 100 kilometers on very poorly maintained dirt roads, without bringing back the patients, are very frustrating and costly.

How can we force them to be treated? How can we make them understand that as soon as the symptoms are detected, they should immediately come for treatment to ensure quick and complete recovery?

We have designed posters to alert and inform the population of the problem; yet we still lack the money to print them and distribute them.

I think it would be wise to classify Buruli ulcer infection as a mandatory reportable disease. Perhaps, proceeding this way, it would make it possible to counter the popular belief attributing this disease to witchcraft, and enable us to start treatment at an early stage of the infection.

#### **7. Transmission of the infection**

So far, we have been unable to start our campaign for collecting samples of water-insects and flying insects, in order to identify the carrier of the mycobacterium. This is because, as yet, we have not been given necessary permission by the sanitary district to drive through the villages for that purpose. Such administrative barriers are very discouraging.

#### **8. Digital photographs library**

The results presented herein can all be examined on the digital photographs taken during the various stages of this study. A library of over 2000 photographs taken with a professional digital camera has been compiled. A commented slideshow will be presented at the WHO Meeting in March 2002.

In the meantime, portions of these slide collection are available upon request.

***OUR HOPE: Never to see these patients again for a relapse.***

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