Topical Solasodine Rhamnosyl Glycosides Derived from the Eggplant Treats Large Skin Cancers: Two Case Reports

Bill E. Cham

Australasian Medical Research, Devil’s Point Road, Port Vila, Republic of Vanuatu.
Email: bill.cham@gmail.com

Received May 25th, 2011; revised June 29th, 2011; accepted July 20th, 2011.

ABSTRACT

Solasodine rhamnosyl glycosides (BEC) are a new class of antineoplastics that show superior efficacy than many established anticancer drugs as shown by intravenous, intraperitoneal and intralesion administrations. Previous studies have described the efficacy of BEC on nonmelanoma skin cancers by topical application. Two cases are now reported which show that BEC in a cream formulation Curaderm is very effective for the treatment of large nonmelanoma skin cancers that are considered difficult to treat by existing modalities. Moreover, the cosmetic outcomes are very impressive.

Keywords: Nonmelanoma Skin Cancers, Solasodine Rhamnosyl Glycosides, Curaderm, Solamargine, Solasonine

1. Introduction

There is an alarming increase in skin cancer incidence. In the US alone, more than two million people develop over 3.5 million nonmelanoma skin cancers every year. This constitutes a more than 300 percent increase in cancer incidence since 1992 [1].

Nonmelanoma skin cancers, such as basal cell carcinoma (BCC) and squamous cell carcinoma (SCC), are the most common forms of skin cancer. Though BCCs are rarely life-threatening, they can be disfiguring when not diagnosed and treated in a timely manner. SCCs can metastasize (spread) to distant tissues or organs and are potentially terminal.

The incidence of skin cancer is higher than all other cancers combined and is considered by some as an epidemic.

A variety of treatments are available for nonmelanoma skin cancers with good outcomes, especially if the cancers are detected and treated in the early stages of development. However, there are some serious disadvantages with the most common treatments. Some disadvantages of current treatments are:

- margin around cancer may not be free of cancer
- moderately painful
- slow healing
- scarring
- specialized training by health professionals with appropriate facilities
- expensive
- activity restriction after surgery if skin graft or flap is needed
- limited cosmetic results

In addition high recurrence rates of treated skin cancers have been reported [2].

The treatment and management of nonmelanoma skin cancers cost the USA healthcare system more than US$1.4 billion per year and this value is increasing dramatically each year.

There is a need for novel treatments for nonmelanoma skin cancers. It has previously been shown in a large number of studies that the glycoalkaloids solasodine rhamnosyl glycosides (SRGs) induce apoptosis in a wide variety of cancer cells [3-7]. SRGs are present in a diversity of solanaceous plants such as the Devil’s Apple (Solanum linnaeanum) and Eggplant (S. melongena). SRGs display specificity towards cancer cells when compared with normal cells and the unique mode of action has been described [8,9]. Anticancer therapies with SRGs in animals and humans have been used intravenously [10], intraperitoneally [11], intralesionally [12] and topically [13-17]. A constant mixture of SRGs, known as BEC, consisting of solasodine containing triglycosides solasonine (β-solatriose) (33%), solamargine (β-chacotriose) (33%), and di-and monoglycosides (34%), are present in
a cream formulation which contains 0.005% BEC (Curaderm). Curaderm is reportedly effective for treating nonmelanoma skin cancers as shown by uncontrolled [13-16] and controlled studies [17]. Here, two cases of large skin cancers treated with the cream formulation Curaderm are reported.

2. Case Reports

2.1. Case Report 1

A 68 year old farmer was referred for consultation because he had a large basal cell carcinoma (BCC). Dermatologists and surgeons had recommended surgical excision and radiotherapy followed by surgical reconstruction with skin grafting. The patient who had this BCC for at least 3 years elected to treat the lesion with the cream formulation Curaderm. The patient exhibited a large lesion, 4 cm × 4 cm × 2 cm, on the right side of his face next to his ear (Figure 1 top row). Histological analysis of a biopsy determined that it was a BCC.

2.2. Case Report 2

A 63 year old retired man had a histologically confirmed squamous cell carcinoma (SCC), 4 cm in diameter, on his head (Figure 2(a)). This patient who had this SCC for at least 2 years refused other treatments and decided to have Curaderm therapy.

2.3. Materials and Methods

The cream formulation Curaderm is available to patients...
in several countries. Curaderm contains the glycoalka-
loids BEC at 0.005% as a topical cream formulation. The
cream was applied twice daily (when possible every 12
hrs) under occlusive dressing (micropore paper tape)
until the lesion had clinically regressed.

3. Results

Figure 1 top row shows the extent of the BCC just be-
fore treatment with Curaderm. The lesion responded rap-
idly to the treatment. The middle row of Figure 1 shows
the appearance of the lesion after 2 weeks of treatment. It
can be seen that minor bleeding had occurred during
treatment. The bottom row of Figure 1 shows the treated
area after 14 weeks of Curaderm therapy. The lesion was
eliminated by the treatment and the cosmetic end result
was outstanding. Note, there was no scar tissue and the
hairs had regrown where the lesion was originally. This
patient did not experience side effects during Curaderm
therapy other than some bleeding had occurred. There
has been no recurrence one year after treatment.

Figure 2(a) shows a large SCC before treatment. This
lesion sometimes oozed exudates. Figure 2(b) shows the
lesion after 3 weeks of Curaderm treatment, the lesion
appeared larger at this stage. Another 3 weeks of treat-
ment shows that the lesion was much “cleaner” and was
starting to fill in with normal tissue (Figure 2(c)). Figure
2(d) shows that after another 3 weeks and that during
treatment more normal skin tissue was replacing the
cancer tissue. After another 2 weeks of treatment the
lesion was almost completely healed (Figure 2(e)). After
a total of 14 weeks of treatment, the lesion had regressed
and normal skin tissue had replaced the lesion. There was
no scar tissue at the completion of the treatment (Figure
2(f)). This patient experienced mild itching and stinging
surrounding the treated lesion for the first week of
Curaderm therapy. There has been no recurrence five
years after treatment.

4. Discussion

SRGs have previously been shown to have good anti-
cancer properties and are superior to other anticancer
agents such as taxol, cisplatin, gemcitabine, camptothe-
cin, vinblastine, methotrexate, 5-fluorouracil, epirubicin
and cyclophosphamide [12,18,19]. The mode of action of
SRGs is unlike any current antineoplastic agent. Specific
receptors for the SRGs present only on cancer cells but
not normal cells are the first step of events that lead to
apoptosis in cancer cells only, and this may explain why
during treatment the cancer cells were being eliminated
and normal cells were replacing the killed cancer cells.
with no scar tissue being formed.

The two cases presented here are large and anatomically difficult to treat lesions. There is little doubt that the cosmetic end result of this type of treatment is at least, or more likely, superior to other available treatments. At the completion of treatment, it could not be distinguished where the tumours once were! Other published studies have shown that recurrences are low with extended follow-up periods [13-17], and no major side effects during Curaderm therapy other than mild itching and transient burning surrounding the treated lesion had occurred. In addition it has been reported that Curaderm therapy had no adverse effects on the liver, kidneys or haematopoietic system [17,18].

Phase I clinical trials with BEC at various concentrations up to 50% in cream formulations were shown to be very safe. There were no changes observed in vital signs. Haematological, biochemical and urinanalytical parameters did not alter by topical application of BEC in such cream formulations [13,16]. It was subsequently shown that very low concentrations of BEC, as low as 0.005% BEC, were effective in treating skin cancers [13-17]. However, in order to obtain efficacy with this very low concentration of BEC in a cream formulation Curaderm BECS, salicylic acid (10%) and urea (5%) had to be added to the cream. These substances acted as keratolytic agents which enabled BEC to have access to the cancer cells. The stinging and slight burning effects sometimes experienced whilst using Curaderm BECS therapy, are caused by these keratolytic agents. Double-blind, randomized, placebo-controlled, parallel group, multicentre studies established that no significant patterns of change for the full blood count, biochemistry and urinanalysis parameters were observed when the BEC groups at 0.005% were compared with the placebo control groups. The adverse effects were similar in both the BEC groups and the placebo control groups suggesting that salicylic acid and urea and not BEC were causing the reported adverse effects. It was concluded that BEC exerted antineoplastic activity and the excipients salicylic acid and urea were responsible for the sometimes transient adverse effects of stinging or slight burning [17].

Topical treatment with Curaderm should be considered as an additional therapy for the treatment of nonmelanoma skin cancers. Curaderm treatment improved the quality of life for these patients.

5. Conclusions

The incidence of skin cancer is higher than all other forms of cancers combined and skin cancer rates are increasing in epidemic proportions.

New treatments are currently being explored to add to the existing treatments of this disease.

Here it is shown that topical application of a cream Curaderm, containing SRGs in the form of a constant mixture, BEC, is amazingly effective for treating large nonmelanoma skin cancers with incredible cosmetic results.

REFERENCES


Topical Solasodine Rhamnosyl Glycosides Derived from the Eggplant Treats Large Skin Cancers: Two Case Reports


