‘Potato Peel Dressing’: A Novel Adjunctive in the Management of Necrotizing Fasciitis

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Abstract Management of necrotizing fasciitis, a rare and potentially fatal, polymicrobial disease comprises of aggressive debridement, intravenous antibiotics and application of various adjunctives. So far adjunctives like hyperbaric oxygen therapy, intravenous immunoglobulins, vacuum assisted or foam dressing, and guided tissue regeneration with amniotic dressing have been put to use. Each of these adjunctives has faced criticism for their shortcomings. Potato peel has been used as a dressing for chronic wounds but there is no literature available on its application over wounds afflicted with necrotizing fasciitis. Owing to various medicinal properties of potato peel and its use as a dressing in other medical conditions, same was used as an adjunctive in the present case. Here we present a case of cervical necrotizing fasciitis of dentogenous origin, treated by mainstay surgical treatment with debridement, drainage in combination with broad spectrum antibiotics and a novel adjunctive, ‘potato peel dressing’, which has shown promising results.

Keywords Non healing wounds · Wound dressing · Necrotizing fasciitis · Potato peel

Introduction

Necrotizing Fasciitis is a rare, usually polymicrobial, potentially fatal, rapidly spreading soft tissue infection characterized by diffuse necrosis of fasciae and subcutaneous tissues. Compromised immune system predisposes

an individual to Necrotizing Fasciitis [1]. Predominantly it is seen affecting the tissues of the abdominal wall, the perineum or the extremities. In the head and neck region, neck is commonly affected and etiology usually is odontogenic infection. The mainstay for a successful treatment is early diagnosis and aggressive surgical intervention along with antibiotic administration. Adjunctive treatment modalities that have been experimented with, in the management of necrotizing fasciitis are hyperbaric oxygen therapy, intravenous immunoglobulins, alginate and hydrogel dressing, vacuum assisted dressing, foam dressing and tissue guided regeneration using amniotic membrane [2–4]. Adjuncts have an important role to play. They hasten the healing process and convert the hostile wound environment into a hospitable one. Tissues in necrotizing fasciitis are hypoxic and the release of radical oxygen species results in oxidative damage of normal cells leading to delayed healing. This was the basis for introduction of hyperbaric oxygen therapy as an adjunctive in the management of necrotizing fasciitis.

Hyperbaric oxygen is mostly found in the hospitals around areas of deep water dives. It is not easily accessible in all hospitals, is expensive and requires patient compliance in regard to claustrophobia associated with this treatment modality. Because of these shortcomings, the employment of HBO therapy remains less used. Immunoglobulin type-A deficiency and history of anaphylaxis restricts use of intravenous immunoglobulins. Alginate and hydrogel dressings cannot be sterilized and hence infection control remains questionable. Although amniotic membrane has been used in the recent past for guided tissue regeneration, it is less explored and expensive.

There is no literature published so far on the use of potato peel in the management of necrotizing fasciitis. This article describes the use of potato peel dressing as a novel

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Fig. 1 A wound measuring $5 \times 3 \times 1$ inches in a case of Necrotizing Fasciitis following surgical debridement

adjunctive. Potatoes have been used for medicinal purposes for over a hundred years and has various significant properties which will be discussed further.

Our treatment included prompt aggressive debridement of necrotic tissue, use of parental broad spectrum antibiotics and frequent dressing of the wound with freshly scraped peel from a washed and dried potato, covered with a layer of Soframycin dressing.

Case Report

A 65 year old patient who underwent incision and drainage for a submental swelling secondary to odontogenic infection reported back to the department after a period of 4 days with

Fig. 2 Wound dressing with potato peel and sofratulle dressing

a non healing wound corresponding to the incision site (Fig. 1). The involved site measured $5 \times 3 \times 1$ inches. Skin surrounding the wound was found to be erythematous with exposure of underlying platysmal layer. Routine investigations and blood profile confirmed him as a systemically healthy patient. Thorough debridement of the wound with Metronidazole and Hydrogen peroxide solutions was carried out followed by daily change of dressings. Dressing comprised of a layer of freshly scraped potato peel followed by a layer of Soframycin ointment (Fig. 2) and external gauge pad. The potato peel was placed in direct contact with all the walls, margin and base of the wound for a period of 24 hours and changed every 24th hour for 7 days. This was supplemented with intravenous antibiotics. A combination of broad spectrum antibiotics of Piperacillin 4 g and Tazobactam 500 mg was administered every 12th hour.

The results obtained were satisfactory. The formation of healthy granulation tissue was hastened and good marginal healing was noted. The dimensions of the wound reduced remarkably from $5 \times 3 \times 1$ to $2 \times 1.5 \times 0.5$ inches (Fig. 3) in a period of one week indicating faster wound epithelization. The wound healed eventually and hence precluded the need for a skin graft which is otherwise usually indicated in fasciitis cases.

Discussion

Necrotizing fasciitis is commonly associated with low immune status which was not the case in this patient. Hence the need for aggressive adjuncts in the form of hyperbaric oxygen was overlooked.

Fig. 3 Postoperatively, reduction in the wound size seen at the end of first week

The mainstay in the treatment of Necrotizing fasciitis has always been aggressive debridement and antibiotic administration along with periodic dressings of the site. Dressings like hydrogel, alginate, topical negative pressure dressing in the form of vacuum assisted wound closing device and amniotic membrane dressing [2–4] are some of the experimented examples that have shown noticeable results. However their shortcomings as discussed in the introduction weigh against the benefits of potato peel. Adjuncts have an important role to play. They hasten the healing process and convert the hostile wound environment into a hospitable one. Tissues in necrotizing fasciitis are hypoxic and the release of radical oxygen species leads to delayed healing. Although this was the basis for introduction of hyperbaric oxygen therapy, already mentioned drawbacks has limited its use. Potato peels are a recent addition to the list of adjuncts, amounting to the various medicinal properties it has. They are a source of phenolic compounds, flavinoids, glycoalkaloids and cell wall polysaccharides [5, 6]. When applied on the wounds, potato peels hasten the healing through various modalities. Glycoalkaloids present in potatoes such as alpha chaconine and alpha solanine are secondary metabolites which are toxic to microorganisms [5]. Also these glycoalkaloids have beneficial properties like antipyretic, anti-inflammatory, and antibiotic activities against pathogenic bacteria, protozoa and fungi [6] and hence can be used even when the wound is discharging pus. The acidic environment created by the deleterious byproducts of bacteria is neutralized by the potassium content in the peel. The free radicals present in the wound are taken care of by the flavinoids, and the glycoalkaloid component of the peel combats the inflammatory component. This creates a hospitable environment for the formation of a healthy, new granulation tissue.

In regard to the confusion surrounding the peeling of potato, the peel obtained from a steamed potato is devoid of its nutrients because of the leaching effect, and the peels from raw potatoes are more suitable as a source of glycoalkaloids and phenolic compounds [7], hence although many studies

advocate procuring the peel from a boiled potato [8, 9], raw potato peel was chosen for the dressing in our case. The excellent medicinal properties of potato peel, its easy availability, the simplicity of the preparation and its affixation to gauze bandages make this dressing a feasible choice for non-healing wounds.

The above mentioned attributes and the promising results noted in the present case encourages us to consider potato peel as a potential adjunctive in the management of Necrotizing fasciitis.

Conflict of interest None.

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