

Honey Dressing in the Management of Malodorous Wounds in Calabar, Southern Nigeria

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Abstract: Wound malodour is a common experience to patients and clinicians, yet it is underrated, not fully appreciated nor appropriately addressed. This report is aimed at demonstrating our experience with honey dressing in the management of malodorous wounds. It is an observational and prospective study carried on 63 out of 241 wound cases treated for a one year period. The study highlighted the aetiology, duration of the disappearance of the odour, the bioburden and surgical modalities of treatment. All patients with malodorous wounds were dressed with honey and some wounds were surgically debrided. The patient's wounds odour were scored on the scale of zero to three daily. About 63 malodorous wounds were admitted out of 241 wound cases managed. The odour disappeared within few days on admission while some were palliatively treated. The common aetiologies were exudating wounds, pressure sores, venous ulcers, diabetic/neuropathic ulcers, fungating malignant ulcers and wounds with necrotic tissues. The bioburden included pseudomonas, klebsiella, staphylococcus aureus, coliforms, Bacteriodes, Enterococcus species. The treatment was by honey dressing, debridement and wound cover with skin graft and flap. Malodorous wounds are common in our practice and the use of honey dressing has proven to be very effective in their management.

Keywords: Honey dressing, malodour, wound, odour

1. Introduction

Wound malodour is a subject vital to patients and clinicians, yet it is sometimes underrated not fully appreciated nor appropriately addressed. Research has shown that wounds most commonly associated with odour include exudating wounds, pressure sores, venous ulcers, diabetic/neuropathic ulcers, fungating malignant lesions and wounds with necrotic tissues. Different agents and treatment modalities have been adopted but the beneficial effect of honey dressing in the treatment of malodorous wounds has not been fully appreciated in the West African sub-region

2. Patients and Method



Figure 1: Pre-supramaleolar ulcer of the leg. (Before dressing with Honey)



Figure 2: Post-supramaleolar ulcer of the leg. (After Honey dressing)

A total of 129 patients were admitted with 241 wounds. They were 86 males and 43 females whose ages vary between 6months and 89 years. The mean age is 45.3years. In order to isolate the bacterial burden, wound swab and wound biopsy for microscopy, culture and sensitivity were concurrently carried out. Wound dressings using honey was done daily or alternate day according to the amount of exudates followed by Crepe bandaging, Limb elevation was adopted, antibiotics was administered according to sensitivity. Analgesics were also given. The wounds were covered with skin grafts and flaps after surgical debridement. A scoring system based on patient perception, like the pain score, could be used to evaluate a product in question. Our patients were asked to score their wound

odour on the scale of zero to three, that is, zero means no odour while 1, 2 or 3 means mild, moderate and severe. Although the odour scoring scale adopted was subjective it was simple and compliance was complete.

3. Result

Out of 241 wounds treated, 63 cases were malodorous. The study revealed the following incidence; Exudating wounds were 13(20.6%), pressure sores 14(14.3%), diabetic ulcers 17(26.9%), septic wounds 6(9.5%), wounds with necrotic tissues 8(12.6%), and fungating malignant ulcers 5(7.9%).

The common pathogens isolated were *pseudomonas*, *klebsiella*, *coliforms*, *staphylococcus aureus*, *proteus mirabilis*, *clostridium species*. In more than one-third of the wounds both the wound swab and the wound biopsy yielded the same pathogens. Honey dressing was used to manage these wounds. Most of them, the odour disappeared within few days while others were palliatively managed as in fungating malignant ulcers.

4. Discussion

Malodorous wounds are seen in exudating or necrotic wounds, diabetic ulcers, pressure sores or fungating malignant wounds. Wound odour is largely due to tissue degradation and/or nonsporing anaerobic bacteria that colonise cutaneous lesions releasing compounds such as putrescine, cadaverine, unstable sulphur compounds and short chain fatty acids as metabolic end products [1]. Anaerobes such as *pseudomonas* and *klebsiella species* can also generate unpleasant odour. Other organisms implicated in the production of bad odour are *staphylococcus*, *enterococcus*, *bacteriodes* and *coliforms* [2]. These findings were similar to our study.

Odours that point to infections are sweet, pungent, foul, strong, fecal or musty. A sweet odour may indicate a *pseudomonas* infection, especially if accompanied by thin, foamy, green drainage. A strong, pungent odour along with tissue necrosis or separation of the skin into paper thin black purple layers may indicate *clostridium*. Putrescine and cadaverine are frequently described as pungent smell. They may cause gag reflex and can cause vomiting [3].

Three main approaches were adopted for the management of odours: systemic antibiotics, topical agents and debridement. In addition, attempts were made to reduce dead space to improve the performance or obviate their need. There were limitations to these approaches largely attributable to the size and eccentric shape of the wounds, the liquefaction of dead tissue and the management of consequent exudates.

Systemic antibiotics were used as presumptive measures to reduce bacterial colonization and control the offensive odour from volatile metabolic end products. The attribution of odour to metabolic end products has been questioned [4]. However, abroad casual relationship between certain bacterial species, necrotic tissues and odour is generally accepted [5]. One of the limitations of systemic antibiotics is the increasing incidence of antibiotic resistance [6]. A further, limitation is their acceptability to the patients which

probably limited by gastric side effects. The palliative care texts suggested that the side effects might be avoided at low doses without losing the therapeutic effect on the odour [6]. Topical metronidazole may overcome the limitations of the systemic route [7][8]. However, in extensive necrotic wounds, sufficient inhibiting concentration of metronidazole to deodorize may not be reached. The problem centers on the size of the wound and a lack of tissue penetration to bacteria located below the surface. In addition to the site of the wound, for example, the perineum may limit the efficacy of the topical gel, which is lost to the absorbent dressings and pad.

Clearance of dead tissue by surgical debridement is generally not an option for fungating malignant wounds and wounds covered with *eschar* may not benefit from debridement if life expectancy is short and the consequent exudates profuse.

Limitation of the hydrating systems, like the hydrogels are again attributable to the size of the wounds and the practicalities of applying a therapeutic amount of hydrogel without adding to existing exudates management problems. In the study, the use of honey and surgical debridement reduced wound odour significantly. This was due to the deodorising effect of honey [5] [9].

These findings for the performance of honey were similar to the case study findings of Dumford et al., [5] Kingsley [8] where authors reported similar findings for the reduction of odour. However, the two case studies also illustrated those patients with chronic wounds who had complex of bacterial colonization and clinical infection that might not be resolved by the topical application of honey.

Honey is a form of autolytic debridement which inevitably increases exudates as the devitalized tissue is liquefied and separated from the wound bed. This exudate has to be contained within wound dressing otherwise the patients experience a further unpleasant problem or the aggravation of an existing one [10] [11]

Since traditional tests for the sense of smell such as sniff test, gustatory smell test and trigeminus test are subjective, tests such as olfactory evoked potentials and cognitive negative variation have developed that permit evaluation of both odour perception and odour discrimination [12]. In a pilot study of 15 patients, Greenwood and colleagues, [13] use an Aromascan instrument to detect and correlate the aroma of chronic venous leg ulcers with prognosis and suggested aroma analysis to be a potential tool in monitoring the progress of chronic venous leg ulcers. However no further studies have been published to support or validate this observation and such tests are not in routine clinical use.

5. Conclusion

Wound malodour is common within our practice as wound caregivers. It is seen in exudating necrotic wounds, diabetic/neuropathic ulcers, pressure sores, fungating malignant ulcers and others. The use of honey dressing is an effective dressing method to combat this problem especially in combination with surgical debridement and systemic

antibiotics. The deodorising property of honey dressing has further strengthened its use in our practice.

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