

Is it possible to use a 100% Medical Grade Honey in the premature babies?

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ABSTRACT

The healing properties of honey are increasingly established in modern medicine, especially in the treatment of skin lesions of various kinds such as bedsores, burns and drug extravasation. There are several studies on the use of honey in adult patients but, in the pediatric population and especially the neonatal one, there are no universal and certain guidelines. At the Hevi Pediatric Teaching Hospital at Duhok, Iraq, an extreme low birth weight baby, with foot injury from drug extravasation was treated with the use of Medical Grade Honey, 100%. After 28 days the lesion healed, without the use of surgical removal of tissue and without allergic complications for the patient. The use of honey in this group of patients must be further investigated and taken into consideration.

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INTRODUCTION

The care of premature babies within the Neonatal Intensive Care Unit (NICU) is very complex and patients are continually at risk for multiple complications; among these are skin lesions, which are a common problem in the NICU population. The skin of premature babies has fewer layers, the most superficial (*corneum*) layer of the epidermis forms around 18-19 weeks of gestation in the womb. As a result of the terminal differentiation of the stratum corneum, there are only a few layers of the epidermis within 23 weeks of gestation.¹

During gestation, by the 26th week, the epidermis is completely keratinized including 5-6 layers. The skin barrier is well formed from the 34th to the 35th week of gestation. For these reasons, the skin of premature babies is very thin in nature, not fully developed and consequently more vulnerable. Consequently, superficial wounds in premature babies are considered full thickness. The most common skin lesions in NICU are those due to the extravasation of drugs or liquids and represent a very important risk for this category of patients given their characteristics.² The use of honey for the treatment and care of wounds is based on thousands of years of history.³ The medicinal importance of honey has been documented in the world's oldest medical literatures and, since ancient times, it has been known to possess antimicrobial properties and wound healing activities.⁴ Honey has an anti-inflammatory action, promotes autolytic debridement and promotes tissue granulation. Honey can exert multiple microscopic actions on wounds.⁵ Medical Grade Honey (MGH) is inflammatory and antibacterial as it is the only one containing GOX and defensin -1, and with high levels of production safety that allow it to be used in adults, babies and children around

the world. Honey in the treatment of skin lesions of premature babies is very limited, especially medical grade honey with a concentration of 100%.⁶

CASE REPORT

A preterm male infant with a gestational age of 26 weeks and a birth weight of 0.750 g was admitted with respiratory distress to the Neonatal Intensive Care Unit (NICU) at Hevi Pediatric Teaching Hospital in Duhok - Iraq. The patient was transferred from Duhok Maternity Teaching Hospital after 3 days of hospitalization. On physical examination the child presented an extravasation lesion secondary to the peripheral intravenous administration of vancomycin, which took place two days before admission to our operating unit. The premature infant had a large bleeding blister on the back of the right foot with eroded and muscular red hypertrophic skin on the medial malleolus and ankle (Figure A1). As a result, there was severe inflammation and distributed edema in the total dorsal foot, signs of extravasation included local pain, erythema, burning, swelling, and necrosis. For the first week, the lesion was treated daily and every 72 hours for the following weeks. The wound was always cleaned with sterile water and 100% pure Medical Grade Honey (Revamil Gel) was applied. Honey gel was applied topically to the wound in a thin layer to cover the wound. The dressing was performed with a sterile procedure and a simple sterile gauze was applied to the wound as a secondary dressing. The injury did not require additional surgery or assisted debridement. Nineteen days after the application of 100% honey, continuous epithelialization was found, and the side of the wound became significantly smaller (Figure 1 A2). The lesion progressed to normal epithelialization and complete closure after 28 days (Figure 1 A3). During the application of 100% honey, no signs of infections emerged, more easily developed in a country with poor hygiene and care. There were no side effects (botulism) or allergies in the premature pa-

tient and glucose levels were always stable. After 62 days of hospitalization, 42 of which in the Neonatal Intensive Care Unit, the patient was discharged without foot consequences (Figure 1 A4).

DISCUSSION

This is the first case of a 26 weeks premature and low weight infant treated with a 100% honey based gel. Furthermore, to our knowledge, Duhok Hevi Pediatric Hospital is the only hospital in Iraq to have this very advanced type of dressing for the treatment of skin lesions.

Extravasation of intravenous infusion into the interstitial space may result from displacement of the intravascular catheter or from increased vascular permeability. Some drugs and infusions are more toxic to the veins than others.^{7,8} Infiltration and extravasation account for 23-78% of complications resulting from peripheral venous perfusions in neonatal intensive care units.⁹ Extravasation injuries can cause severe ischemia, infection, necrosis and pain and, in the long term, lead to scarring, contractures and loss of function. Newborns are unable to verbally identify either expressing pain, for this reason extravasation of the infusion fluid may not be detected for a longer period of time, which exacerbates tissue damage.¹⁰

In addition, superficial wounds are also considered full-thickness wounds in premature babies and this increases the risk of infection.¹¹ Revamil Healing Gel consists of 100% pure gamma-ray sterilized honey with a Ph of 3.5. The Gel performs the autolytic debridement of necrotic tissue and has a powerful antibacterial and long-term activity and stimulates the activity of fibroblasts, accelerating the development of the natural healing process.

Revamil is a recent dressing from MGH and is intended to manage most of the problems that can arise during wound care episodes.¹² MGH has been shown to have a faster bactericidal effect than other honey products.¹³ Honey products have no apparent contraindications to



Figure 1. Foot lesion before, during and after the treatment with the Medical Grade Honey.

their application, other than an allergy to honey or bee products, and can be applied to a wide range of wound types.^{14,15} In several studies, the use of honey dressings reduced the time required for wound healing in critically ill infants and children with extravasation injuries.¹⁶

The basic signs of infection (edema, redness and pain) rapidly diminished after application by MGH. In the case report illustrate, wound healing was almost minimal and the full range of motion was preserved.^{17,18} MGH is effective for the treatment of lesions induced by very mild preterm extravasation neonatal patients.¹⁹⁻²¹ There are no universal guidelines and current existing guidelines sometimes conflict.^{22,23} The cases presented in the literature are similar to the case presented and are very limited due to their complexity and the characteristics of the patient. Further studies on the use of honey for medical use need to be developed and could reduce complications for premature patients who have suffered an injury. However, from this study, it can be inferred that honey is safe and effective for the treatment of extravasation-induced lesions even in extreme premature conditions but further studies on the impact of honey dressings in this category of patients need to be investigated.

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