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بسم اللّه الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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بعض الوثائق الأصلية تالفة

بالرسالة صفحات
لم ترد بالأصل

Anesthesia & Intensive Care Department
Faculty of Medicine
Ain Shams University

Effect of Growth Hormone on Outcome of Pediatric Burn Patients

Thesis

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Sherif Hany Adly

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Abb.	Full term
° C	*Celsius*
CNS	*Central nervous system*
CO2	*Carbon dioxide*
CRH	*Corticotropin releasing hormone*
Da	*Dalton*
ECD	*Extracellular domain*
FNIII	*Fibronectin type III homology domains*
G-CSFR	*Granulocyte colony-stimulating factor receptor*
GFR	*Glomerular filtration rate*
GH	*Growth hormone*
GHBP	*GH binding protein*
GHR	*GH receptor*
GHRH	*Growth hormone releasing hormone*
GH-S	*GH secretagogues*
ICD	*Intracellular domain*
ICU	*Intensive care unit*
IGF-1	*Insulin-like growth factor 1*
IGFBPs	*IGF binding proteins*
kg	*Kilogram*
LOS	*Length of hospital stay*
mg	*Milligram*
mmhg	*Millimeter mercury*
MOF	*Multi organ failure*
rGH	*Recombinant human growth hormone*
rHGH	*Recombinant human growth hormone*
TBSA	*Total body surface area*
TPN	*Total parental nutrition*
U/mL	*Unit per milliliter*

INTRODUCTION

There are more than 300,000 deaths worldwide due to a burn insult, over the last 40 years burn outcomes improved dramatically, due to establishing specialized burn centers and profound advances in therapy strategies, such as improved resuscitation, implementation of burn specific critical care protocols, fast and more adequate wound coverage, more appropriate infection control, improved management of inhalation injury and better support of the hyper-metabolic response ***(Jeschke, 2016)***.

However, severe burns remain an injury that affects nearly every organ system and that leads to a significant morbidity and mortality. Deaths in burn patients generally occur either immediately after the injury or weeks later as a result of infection/sepsis, multi-system organ failure or hyper-metabolic catabolic responses ***(Jeschke, 2016).***

However the cause of death has been changed significantly in the last decade. Cause of death in severely burned patients used to be due to anoxic brain injury, followed by sepsis, and multi organ failure. Nowadays the major cause of death in burned patients is sepsis followed by multi organ failure and anoxic brain injury. As increased sepsis and infection, as well as MOF are usually strongly linked with hyper-metabolism these data indicate that hyper-metabolism is

not only directly but also indirectly related with poor outcomes after burn ***(Jeschke, 2016).***

Severe burns are associated with a persistent hyper-metabolic response characterized by hyper-dynamic circulation and increased circulating levels of catabolic hormones such as catecholamines, glucagon, and cortisol. High energy expenditures are met by heightened energy substrate release from available protein and fat stores. Protein breakdown is primarily from active muscle tissue, which leads to a loss of lean body mass and severe muscle wasting. This muscle wasting leaves severely burned patients with insufficient strength to recover from their injuries in an appropriate time ***(Herndon et al., 1999).***

The beneficial effects of growth hormone on wound healing in severely burned children were studied. Forty patients who were 2 to 18 years old, with 40% or more total body surface area (TBSA) and 20% or more TBSA full-thickness flame or scald burns, were randomized in a double-blind study to receive placebo or 0.1 mg/kg/day recombinant human growth hormone (rHGH) until the first donor site healed or to receive 0.2 mg/kg/day rHGH or placebo from admission throughout hospitalization. Patients receiving 0.2 mg/kg/day rHGH demonstrated significantly higher serum IGF-1 levels at 4.8 ± 1.7 U/mL compared to placebos at 1.6 ± 0.4 U/mL ($p < 0.05$) and a significant decrease in donor-site healing times compared to placebo ($p < 0.05$). Length of hospital stay

(LOS/%TBSA) was decreased from 0.80 ± 0.10 days/%TBSA burned in the placebo group to 0.54 ± 0.04 days/%TBSA burned in the 0.2 mg/kg/day treatment group ($p < 0.05$). This translates, for the average 60% TBSA burned patient, to a decrease in LOS from 46 to 32 days ***(Herndon et al., 1990).***

Management of severely burnt children is one of the most challenging situations in the ICU. Control of the hyper-catabolic state is the most limiting step that determines patient survival. Immunocompromisation and delayed wound healing usually result in severe sepsis, which is the most common direct cause of death in these patients. There is debate about the efficacy and safety of recombinant human growth hormone (rGH), although it has been used to improve healing of burnt patients ***(Salem et al., 2016).***

Aim of the Work

The objective is to determine the safety and efficacy of using recombinant human growth hormone (rhGH) in the treatment of pediatric burn victims and their ICU length of stay, mortality and morbidity.