Revolutionary Skin-Gun Burn Treatment

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Abstract—“Burns are a global health problem accounting for an estimated 265,000 deaths annually” (World Health Organization). If not dealt with in a fairly quick manner, infection and dehydration risks arise. If the burn is widespread, skin grafting is required. This method requires a slow recovery time and isn’t always successful the first time. With a skin-cell gun, procedure takes half an hour and healing time is cut down to a few days.

I. INTRODUCTION

Burns affect our global population, from upper class to lower class, males and females, children and adults. Children age 1-9 are most vulnerable, having burns as the eleventh leading cause of death and the fifth non-fatal childhood injury. Burns also have a huge economic effect, exceeding $211 million for direct costs for care of children only in the U.S. suffering from burns in the year 2000.

II. METHODS

One would assume since this is such a big concern worldwide, that we should have a very up-to-date, advanced way to deal with cases. One would be correct in assuming that. Based on the severity of the burn and the location, different precautions are taken. If the person has a severe burn, a skin graft will often be the treatment they will choose. Skin will be removed from one area of the body and transplanted onto the burn site. There are skin grafts for a few layers of outer skin and also skin grafts for full-thickness of the skin, which involves muscles and blood supply. This is much tougher and takes longer to recuperate.

There are many risks while undergoing a skin graft including, infection, bleeding, chronic pain and most importantly noted, the graft not healing, or the graft healing slowly. This is a major problem, and it got the needed attention it deserved. In the early 2000’s Dr. Fiona Wood of the West Australia Burns Unit developed “spray-on-skin”. It isolates stem cells from the skin that naturally grow and repair skin and put them in an aqueous solution, which is then sprayed on the burn site. This method takes 30 minutes, which is key for burn victims that need help quickly before infections and dehydration can play a role.

III. RESULTS

After treatment using Spray-on-skin, the wound heals in days rather than weeks or even months! This fixes the most important problem that skin grafting had in store for burn patients; the skin graft not healing or healing very slowly. This also allows the patient to keep his/her skin intact in other parts of the body.

A skin gun has been in development since 2008 by U.S. scientists that uses the same principles, and as of February 2011, has successfully treated more than a dozen patients.

IV. DISCUSSION

This technique sounds perfect, but it is not flawless. Using a patient’s stem cells to repair their own burns is ingenious, but it only works on up to severe second degree burns. The future outlook of this technology is resolving a way for it to be able to treat third degree burns on patients.

REFERENCES
