Methods for Pressure Ulcer Prevention
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Abstract—Pressure ulcers are an injury that can be seen in hospitals and bedridden people. They can be very painful and even life threatening, so a study was performed to find out the effects of dressings and topical agents on pressure ulcers. There were 9 different trials performed in hospitals.

I. INTRODUCTION

Pressure ulcers are defined as an injury to the bony area of a person caused by prolonged pressure, such as an elderly person who is bedridden and is constantly putting pressure on their hip. The severity of the ulcer can range from just a tender blister type of injury to the complete loss of tissue and skin where the bone or muscle is now exposed[1]. The figure on the right shows the severity of ulcers, where the shades of brown are dermal layers, red is muscle and grey is bone[4]. Ulcers can try to be prevented by relieving pressure on an area periodically and maintaining cleanliness to the areas susceptible to ulcers. It is a fairly common thing to see in hospitals and there are 2 means of treatment, dressings and topical agents.

Not too much is known about ulcer treatment so a summary was compiled of 9 different types of studies performed. They fell under 2 main categories, topical agent compared with placebo and dressing compared with no dressing. Patients were selected if they were in a healthcare setting such as a hospital and at high risk of getting a pressure ulcer without currently having one.

II. METHODS

The primary outcome for all the trials was pressure ulcer incidence, which is simply the amount of people that developed a pressure ulcer of any grade. There were 5 separate studies performed to address topical agents compared with placebo, I chose to focus on the Houwing study. They had a 4 week follow up with 3 different scenarios for pressure ulcer incidence: intervention group, control group, and placebo group[3]. All 3 trials had the patients change their lying position by 30 degrees every 6 hours. The intervention group was given DMSO-cream every 6 hours and consisted of 29 patients. The 32 patients of the placebo group were given a “fake” cream every 6 hours. There were 18 patients in the control group and they weren’t given any cream.

This figure shows a tailbone dressing like the one used in the Kalowes study. There were 4 studies on dressing compared with no dressing. I chose to focus on the Kalowes study. This study followed up participants while in the intensive care unit, where the average length of stay was 6.5 days and a range from 0 to 120 days[2]. The extent of the participants injuries was not given. The intervention group had a dressing applied to the skin covering the tailbone area. The control group had no dressing applied.

III. RESULTS

Results for the experiments are presented as risk ratios (RR). Risk ratio indicates the chances of pressure ulcer development for people in the experimental group compared with the control group[1]. A risk ratio of one means there is no difference between two groups in terms of their risk of pressure ulcer development. The RR indicates the relative benefit of a therapy but not the actual benefit. This means it does not take into account the number of people who would have developed a pressure ulcer anyway. The Houwing study results identified a pressure ulcer incidence of 62.1% in the intervention group, 31.3% in the placebo group and 38.9% in the control group[3]. There was no statistically significant difference in pressure ulcer incidence between the intervention and the control group (RR 1.60, 95% CI 0.84 to 3.04). There was no statistically significant difference in pressure ulcer incidence between the placebo and control group (RR=0.80, 95% CI 0.37 to 1.74). There was a statistically significant difference in pressure ulcer incidence between the intervention and the placebo group (RR = 1.99, 95% CI 1.10 to 3.57).

For the Kalowes study, The incidence of pressure ulcers in the intervention group was 0.5% (n=1/169), and the incidence in the control group was 4% (n=7/166)[2]. The trial authors reported a statistically significant difference between the groups (P value 0.001), however, RevMan analysis did not replicate this and found no statistical difference between the groups (RR 0.14, 95% CI 0.02 to 1.13; P value 0.06)

IV. DISCUSSION

Pressure ulcers are a relatively common and important complication and the application of creams or other topical agents are often used to prevent pressure ulcers from forming. However, I think there is insufficient evidence from the independently funded clinical trials to recommend the use of topical agents for this purpose. The Kalowes study seemed to show that dressings worked but with the mean time being 6.5 days, a longer follow up may have been helpful.

Future trials should be large enough to show meaningful differences; include patient-related outcomes such as product acceptability, quality of life etc. With time, more specialized dressings and topical agents may be developed.

REFERENCES