CHAPTER II

RESEARCH DESIGN

Primary research question

In patients with twenty to seventy percent burn in Bhumibol Adulyadej Hospital, can treatment guided by surface swab culture plus burn wound biopsy culture reduce the duration from culture to successful skin graft compared with treatment guided by the burn wound biopsy culture alone for at least two days?

Secondary research questions

1. What is the accuracy of surface swab culture compared with quantitative burn wound biopsy culture (gold standard)?
2. What is the most common cause of burn wound infection in patients with twenty to seventy percent burn in Bhumibol Adulyadej Hospital?
3. What are the mortality rates and complications in both groups?

Research objectives

1. To compare the duration from culture to successful skin graft between burn patients whose treatment are guided by surface swab culture plus burn wound biopsy culture and patients whose treatment are guided by burn wound biopsy culture alone.

2. To evaluate the accuracy of the surface swab culture in diagnosis of burn wound infection in terms of sensitivity, specificity, and predictive value compared to quantitative burn wound biopsy culture(gold standard).

3. To find the most common microorganism that causes infection in major burn patients.

4. To compare mortality rates and complications in both groups.

Hypothesis

Treatment guided by surface swab culture can reduce the duration from culture to successful skin graft because we can get the result earlier and start the right treatment earlier than waiting for the result of burn wound biopsy culture.

Operational definition

1. 20-70% burn :- Patients sustain the burn injury for twenty to seventy percent of body surface area according to burn chart (appendix I)

2. Surface swab culture :- The procedure of taking culture from the surface of burn wound by using swab, no procedure for cutting the tissue. In this study we use the bioswab with transport media (Stuart media) that is produced by Kendall-Gammatron Ltd. After the procedure is completed by doctor in burn unit, the specimen will be sent to microbiologist for culture. The result will be reported within two or three days.

3. Burn wound biopsy culture :- The procedure of taking culture by cutting the tissue at burn area (the same site as surface swab culture is taken but deeper). The size of tissue is one square centimeter and deep to subcutaneous tissue. The specimen will be put into the sterile bottle and sent to microbiologist for culture. The process are shown

in appendix V. The result will be reported in three to five days. The result will be positive if the microorganism are found > 10^5 per gram of tissue.

4. Successful skin graft :- The procedure of split thickness skin graft that at least 80% of the graft takes.

Research design

The appropriate design is a randomized clinical trial. The site of the study is burn unit of Bhumibol Adulyadej Hospital. The procedure for testing is surface swab culture and the gold standard is quantitative burn wound biopsy culture.