KRW2016

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1st Allied Health Scientific Colloquium (AHSC) 2016

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PROGRAMME & ABSTRACT BOOK

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Abstracts

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Early Response in Antibacterial Activity of Orthopaedic Metal Implant Coated with Silver Composite for Future Osteomyelitis Treatment: *Preliminary Results*

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ABSTRACT

Objectives/Research Problem: The prevalence of chronic osteomyelitis remains high. The management of this disease poses a major challenge in orthopaedic. It is difficult to achieve an optimum or a definitive cure and to prevent serious complications. Orthopaedic implant infection is chronic and biofilm based. Current treatments for bone infection i.e. osteomyelitis include antimicrobial therapy or using antibiotics, debridement, and follow-up care involving stabilization of the bone and management of any remaining dead spaces post debridement. In order to achieve optimum therapeutic effect, high parenteral dose of antibiotic is needed to penetrate and kill the biofilm bacteria. However, high antibiotics dosage and prolonged course of treatment can lead to systemic toxicity. Hence, to overcome this, alternative treatment strategy using orthopaedic metallic implant coated with 3% silver composite as antibacterial agent have been introduced for osteomyelitis treatment. The 3% silver composite exhibits good bactericidal properties. It inhibits biofilm formation particularly, at the adhesion stage of the relevant bacteria. Hence, the aim of this study is to investigate the potential effect of silver coated orthopaedic metal implant against biofilm-producing *Staphylococcus aureus* through in vitro experimental setting.

Materials and Method: The antibacterial property of orthopaedic metal implants was investigated using *Staphylococcus aureus* ATCC 25923. The implants were cut with an average size ranging from 3.0mm to 5.0mm of length. The antibacterial effect was evaluated based on the diameter of inhibition zone using disk diffusion test.

Results and Discussion: The disk diffusion test showed that the inhibition zone with diameter is 20mm after one week of incubation which indicating the susceptible of concentrations against *Staphylococcus aureus*. The outcome of this study revealed positive response of the silver as antibacterial agent. The experiment is still ongoing.

Conclusion: This result suggested that orthopaedic metal implant coated with silver composite has the intended antibacterial properties and may provide protection against medical device-related infection.

KEYWORDS: Silver Coated, Antibacterial Activity, Osteomyelitis, Medical Device-Related Infection

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