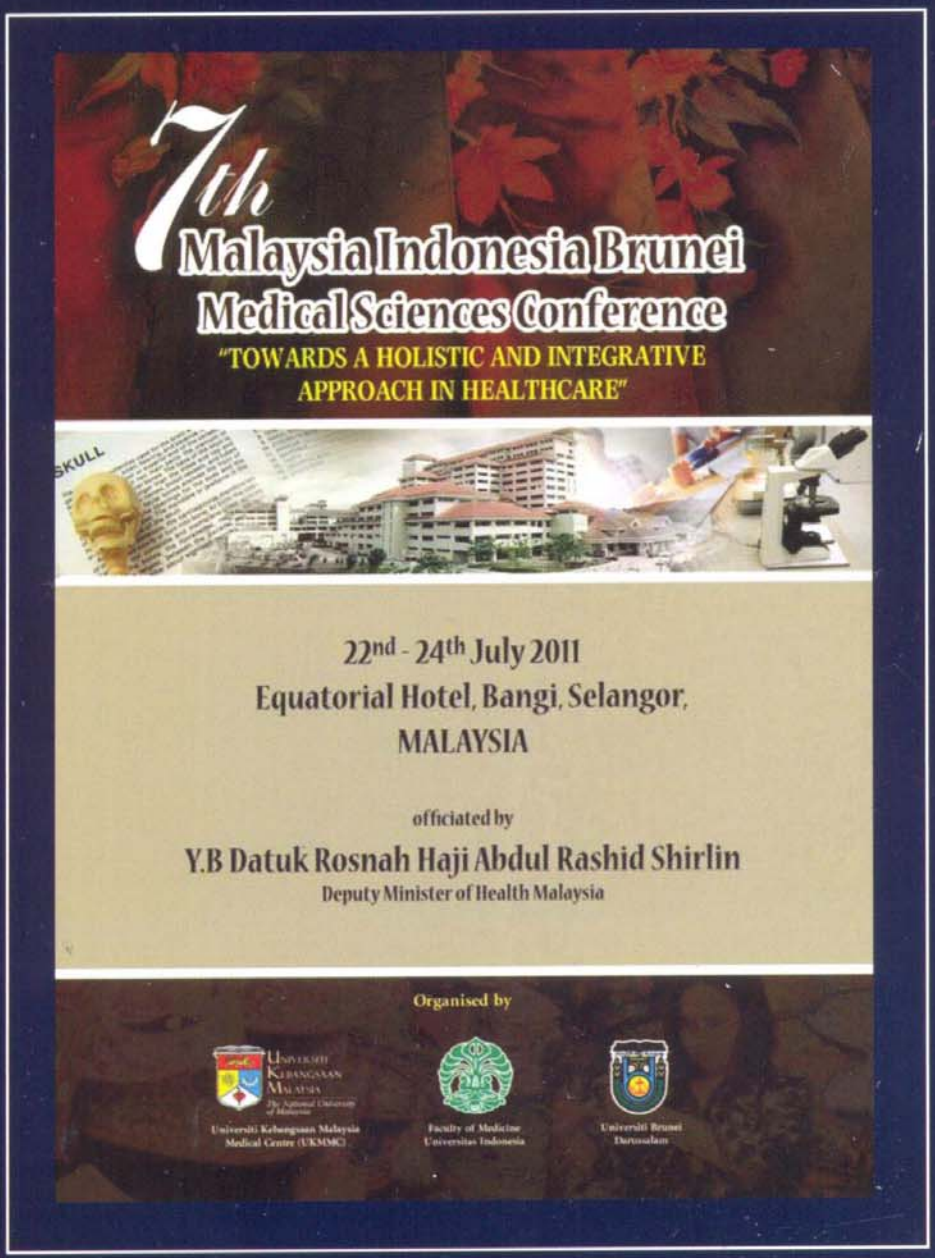
Volume 6, No. 1 (Supplement)
June 2011
ISSN 1823-2140

The National University with an INTERNATIONAL REACH

UNIVERSITI KEBANGSAAN MALAYSIA
National University of Malaysia

MEDICINE & Health

The Official Journal of The Faculty of Medicine UKM



EFFECT OF *STAPHYLOCOCCUS AUREUS* AND *STAPHYLOCOCCUS EPIDERMIDIS* EXOTOXIN AND ENDOTOXIN ON BMSC GROWTH

Rahyussalim, Andriansjah, Ismail, Andri L, Yuyus K

Department of Surgery and Microbiology Clinic, Faculty of Medicine, Universitas Indonesia

Background:
The use of stem cells in cases of spinal cord defects caused by the infection becomes a challenge. Stem cells and bacteria are expected to respond to each other. There are many possibilities that can happen. Interactions that occur will greatly influence the decision whether the use of stem cells to overcome a wide defect of the spine due to the infection process is reasonably acceptable.

Methods:
Cryopreserved BMSCs were thawed and washed in PBS before seeding into Ø10 cm plate with seeding density 10,000 cells/cm^2. Culture was maintained for 11 days followed by subculturing on day 11. Cells were trypsinized and counted before they were seeded into 12-well plate (seeding density 7,000 cells/cm^2). Eight hours after seeding, 0.1 mg/ml *Staphylococcus aureus* (SA) and *Staphylococcus epidermidis* (SE) toxin supernatant were added into the culture media. Cell counting was performed 2, 5, 7, and 9 days after toxin addition to get the growth profile

Results:
From the graph it can also be seen that endotoxin (of debris) influences more strongly mesenchymal stem cell growth inhibition compared to exotoxin (supernatant). These results have implications that mesenchymal stem cell applications in case of infection should consider the presence of this debris. Conducting adequate debridement thus minimizing the amount of bacterial debris should be a major prerequisite in addressing the use of stem cells in cases of infection.

Conclusion:
Recognizing the exact type of bacteria infecting the spine is a must. Both exotoxin and endotoxin from Staphylococcus aureus and Staphylococcus epidermidis have the effects inhibiting the growth of mesenchymal stem cell. Mesenchymal stem cells seem as if they were attempting to provide resistance to survive from exotoxin and endotoxin environment of the two bacteria.

Keywords:
Staphylococcus aureus, *Staphylococcus epidermidis*, exotoxin, endotoxin, bone marrow mesenchymal stem cells.