World Academy of Science, Engineering and Technology
International Journal of Biomedical and Biological Engineering
Vol:9, No:11, 2015

Micro-CT Assessment of Fracture Healing in Androgen-Deficient Osteoporosis Model

Authors : Ahmad N. Shuid, Azri Jalil, Sabarul A. Mokhtar, Mohd F. Khamis, Norliza Muhammad

Abstract : Micro-CT provides a 3-D image of fracture callus, which can be used to calculate quantitative parameters. In this study, micro-CT was used to assess the fracture healing of orchidectomised rats, an androgen-deficient osteoporosis model. The effect of testosterone (hormone replacement) on fracture healing was also assessed with micro-CT. The rats were grouped into orchidectomised-control (ORX), sham-operated (SHAM), and orchidectomised; and injected with testosterone intramuscularly once weekly (TEN). Treatment duration was six weeks. The fracture was induced and fixed with plates and screws in the right tibia of all the rats. An in vitro micro-CT was used to scan the fracture callus area which consisted of 100 axial slices above and below fracture line. The analysis has shown that micro-CT was able to detect a significant difference in the fracture healing rate of ORX and TEN groups. In conclusion, micro-CT can be used to assess fracture healing in androgen-deficient osteoporosis. This imaging tool can be used to test agents that influence fracture healing in the androgen-deficient model.

Keywords : androgen, fracture, orchidectomy, osteoporosis
Conference Title : ICMISC 2015 : International Conference on Medical Image and Signal Computing
Conference Location : Kyoto, Japan
Conference Dates : November 12-13, 2015