ABSTRACT

The Effect of Electromagnetic Field Stimulation on The Healing of Tibial Fracture of Ovariectomized Rats

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There were three indicators for fracture healing: the amount of osteoblast that express Transforming Growth Factor-β, the amount of osteoblat its self and the thickness of callus. Electromagnetic field stimulation was one of the alternative therapy to promote fracture healing in postmenopause, but the process remain unclear.

Twenty *Rattus norvergicus* which have been underwent ovariectomized to have post menopause condition, one week afterward fracturized of the tibia was performed. These twenty rats then divided in two group, each contain 10 rats. First Group was control group which do not recieved electromagnetic field stimulation. Second group recieved electromagnetic stimulation for 6 hours a day for 4 week period. After 4 week all rats were underwent imunohistochemical and histopathological analysis for the amount of osteoblast that express Transforming Growth Factor-β, the amount of osteoblat its self and the thickness of callus.

The number of osteblasts that express Transforming Growth Factor-β in count per visual field were ($0,78 \pm 0,61$ for 1st group and $2,75 \pm 0,368$ for 2nd ones) and the amount of osteoblat ($4,88 \pm 1,35$ for 1st group and $12,62 \pm 1,98$ for 2nd ones), the 2nd group were significantly higher then the 1st ones. There was no significantly different in the Callus's thickness between the groups ($166,5\pm15,99$ for 1st group and $184,0\pm 57,63$ for 2nd ones) . This experimental study shows that electromagnetic field stimulation can promote healing process in post ovarictomized fracture healing. These findings suggest that electromagnetic field stimulation can promote osteoporotic fracture healing in osteoporotic patients.

Keywords : electromagnetic field stimulation, fracture healing, ovariectomy

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