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Prevention of Rapid Trabecular Bone Loss in Women Undergoing Bilateral Oophorectomy

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ABSTRACT

Objective To assess the effect of estrogen replacement therapy (ERT) on bone changes in women undergoing bilateral oophorectomy.

Design Prospective analysis.

Setting Department of Obstetrics and Gynaecology, Faculty of Medicine, Chulalongkorn University Hospital.

Subjects and methods Thirty-six women undergoing bilateral oophorectomy and hysterectomy were recruited for the study. Women in the study group (19/36) received conjugated equine estrogen 0.625 mg or percutaneous 17 beta-estradiol 1.5 mg per day, while the control group (17/36) did not receive any hormone regimen.

Main outcome measures Bone mass measurement of both groups was performed at lumbar spines (L_1 - L_4) and hip (Non dominant side) by dual energy X-ray absorptiometer at 0, 6 and 12 months.

Results There was faster bone loss rate of lumbar spines in the control group than in the study group. (Percent changes of bone mineral density at 6 and 12 months, ERT : +0.45%, + 0.97%; Non-ERT : - 2.6%, -4.39% respectively, $P < 0.05$)

Conclusion This study showed the preventive effect of ERT on rapid trabecular bone loss in women undergoing surgical castration.

Key words : estrogen replacement therapy, trabecular bone loss, oophorectomized women

in spinal bone mineral density compared with the baseline.

In this study, bone measurement was performed using dual energy X-ray absorptiometer (DEXA). This enables bone density to be measured at hip and spines with greater precision and accuracy than the other methods[15] (Single photon absorptiometer, dual photon absorptiometer, quantitative computed tomography). Apart from that, with the rapid bone loss in the non-ERT group, significant difference in trabecular bone loss of spines could be seen as early as 6 months between the study and control group.

Without estrogen replacement, the results revealed rapid bone loss (-4.39% at 12 months) in women undergoing bilateral oophorectomy (Figure 1). Christiansen's longitudinal studies of early postmenopausal women have shown that there are two characteristic groups.[16,17] Approximately 35% lost significant amounts of bone

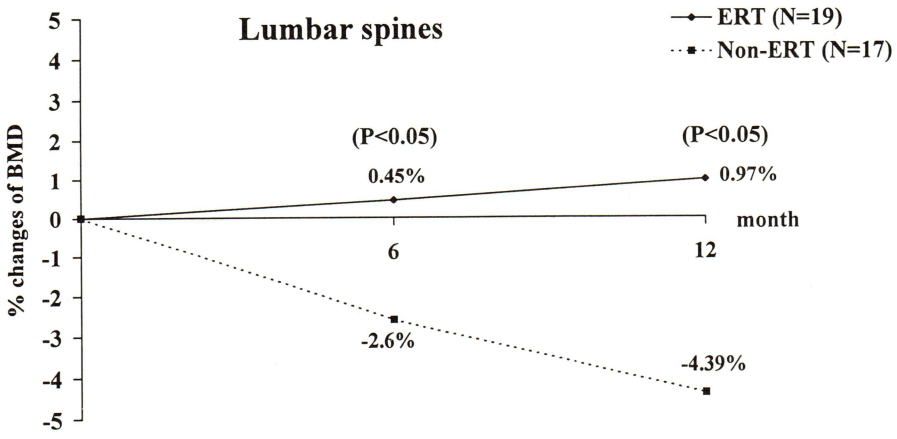


Fig. 1. Percent changes of bone mineral density (BMD) in ERT and non-ERT surgical menopausal women. (Lumbar spines : L1 - L4) (ERT = estrogen replacement therapy)

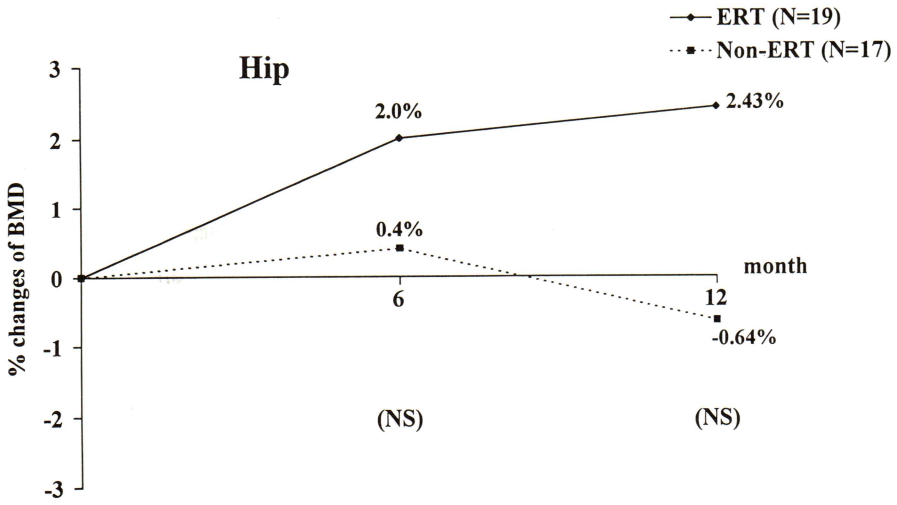


Fig. 2. Percent changes of bone mineral density (BMD) in ERT and non-ERT surgical menopausal women. (Hip) (ERT = estrogen replacement therapy, NS = No statistically significant difference)

mineral (more than 3% per year) which was classified as fast bone loser. Whereas, approximately 65% lost only a minor amount of bone mineral. Hence, women undergoing bilateral oophorectomy should also be categorized as the fast bone loser. This is because, to wait for 5 years without any prevention or treatment could result in a 15-30% loss of bone mass.[18]

In conclusion, this study showed rapid bone loss in women undergoing bilateral oophorectomy who received no estrogen replacement. Nevertheless, this could be prevented by administration of estrogen in the recommended dose as shown in this study.

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