Serum IL-17 and postmenopausal osteoporosis

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Abstract:

Background: Osteoporosis is a bone condition that makes bones thininer and more fragile because of reduced bone density and it puts people at risk of fractures, especially of the hip, spinal vertebrae and wrist.

Objective: This study will highlighted the role of IL-17 in postmenopausal osteoporosis.

Patients and methods: This study applied on 84 includes subjects (42 postmenopausal osteoporosis patient and 42 of healthy control group), conducted from December 2014 to March 2015 to measure the IL-17 serum level by using ELISA kit.

Results: In osteoporotic postmenopausal women the mean of serum IL-17 was (0.49pg/ml) and it is significantly higher than that of healthy group (0.09pg/ml).

Conclusion: Serum IL-17 was significantly elevated in osteoporotic postmenopausal women when compared to healthy postmenopausal women.

Keywords: Postmenopasual, Osteoporosis, IL-17.

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Introduction:

Osteoporosis is a bone condition that makes bones thinner and more fragile because of reduced bone density, and it puts people at risk of fractures, especially of the hip, spinal vertebrae and wrist [1,2]. The most common form of osteoporosis is postmenopausal osteoporosis, its main reason is estrogens deficiency [3,4]. In the last years, new evidences of the relationship between immune system and bone have been accounted in humans affected by bone disease, such as osteoporosis and bone metastasis [5,6,7,8]. IL-17 is a proinflammatory cytokine secreted by activated T-cells. It's ligands and receptors may play an important role in the homeostasis of tissues in health and disease beyond the immune system [9,10]. Now IL-17 consider as a new inducer of bone loss in postmenopausal osteoporosis, and it represents across link between estrogen deprivation and increased immune reactivity [11].

Patients and Methods:

This study was conducted in the period between December 2014 and March 2015. Forty two patients attend « Medical City, Baghdad Teaching Hospital» as newly diagnosed patients of postmenopausal osteoporosis compared to 42 apparently healthy postmenopausal without osteoporosis.

Blood samples were optained from each individual by venous puncture, then was left to clot at room temperature, centrifuged and serum was collected for the detection of human IL-17 by using enzyme linked immunosorbent assay (ELISA) technique. IL-17 ELISA kit (cusabio biotech co., LTD.) human interleukin 17 (catalog No.CSB-E12819h). P.R. china

Statistical analysis: was perfomed using T-test with significant difference at ($p<0.05$).

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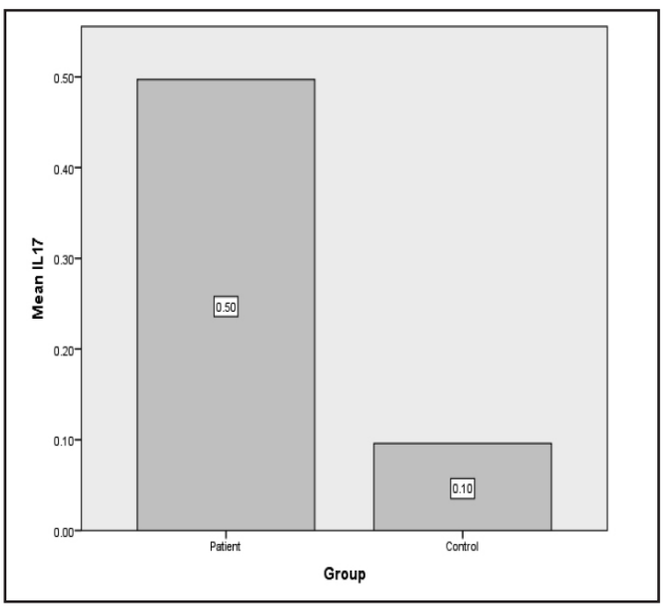
Results:

Table (1) and figure (1) show the difference of serum IL-17 level in osteoporotic postmenopausal women in comparison to healthy group. It shows that the mean of serum IL-17 was (0.497pg/ml) and it is significantly higher than that of healthy group (0.096pg/ml).

Table (1): Distribution of the serum IL-17

	Type	N*	Mean ± SD pg/ml	p.value
IL-17	Patient	42	0.497± 0.456	0.0005 [S**]
	Control	42	0.096± 0.145	

* N= number, **.S= significant



Figure(1):Serum IL-17 level in patients and control

Discussion:

As it is known that IL-17 is a cytokine associated with some proinflammatory properties, and it is produced by the T-cell group, known as the Th17 cells [12,13,14,15].Now a day it is known that IL-17 produces not only Th17 lymphocytes but also other types of cells, including macrophages,neutrophils and mast cells[15].In the present study, serum IL-17 were significantly higher in postmenopausal osteoporotic women. This result agreed with other results who showed that IL-17 can play in inducing chronic inflammatory events such as bone loss[16,17,18,19].Some studies shown that IL-17 localized at the top of the inflammatory cytokine cascade and it stimulates fibroblasts, synoviocytes and macrophages to produce more proinflammatory cytokines[12]. Moreover, an inhibition of IL-17 having bone spring effect under overiectamy by antibody approach could form the basis for using humanized antibody against this cytokine towards the treatment of postmenopausal osteoporosis [20]. Thus, results of recent research significantly expanded our ideas in pathogenesis of postmenopausal osteoporosis [21,22].At present,on a cellular and molecular scaie it proved the impotant and the dominant role of immune factors in the development of osteoportic violations of bone tissue is likely to be caused by the estrogens deficiency[21]. At last, it was recently reported that IL-17 is able promote bone loss by stimulating osteoclast formation and inhibiting osteoblast differentiation [23]. Indicating once again the role of the immune system in the regulation of bone turnover [8,23,24,25].Other studies paid attention to the relation between immune system, estrogen deficiency and bone loos ;some of pathways have been clarified where as others remain an unexplained challenge[25].

Conclusions:

Serum IL-17 was significantly elevated in osteoporotic postmenopausal women when compared to healthy postmenopausal women.

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