

<i>University of Baghdad</i>				
College Name	<i>College of Medicine</i>			
Department	Biochemistry			
Full name as written in passport	<i>Najat Sadeq Hasan</i>			
e-mail				
Career	◉ Assistant Lecturer	◉ Lecturer	◉ Assistant Professor	◉ Professor
	◉ Master		◉ PhD	
Thesis Title	<i>Bone Turnover Markers (BTM) , Vitamin D Levels (Vit D) , Bone Mineral Density (BMD) and disease activity in Patients With Ankylosing Spondylitis (AS) on Infliximab Therap</i>			
Year	2014			
Abstract	<p><u>Background:</u> Ankylosing spondylitis (AS) is a chronic inflammatory disease of the axial skeleton, with variable involvement of peripheral joints and nonarticular structures. In severe cases, it can eventually cause complete fusion and rigidity of the spine . There is no cure for AS, although treatments and medications can reduce symptoms and pain.</p> <p><u>Objectives:</u></p> <p>1 - To assesse AS – relation to osteoporosis by investigating the Bone Mineral Density (BMD) , Bone Turnover Markers (BTM) , Vit D and clinical assessment of disease activity .</p> <p>2 - To identify parameters that are related to low BMD (osteopenia or osteoporosis) in AS patients with active disease.</p> <p>3 - To study the impact of infliximab used as a biologic TNF-α blocker .<u>Subjects and Methods:</u></p> <p>- Eighty five AS patients male were enrolled in this study with a mean \pm SD of age 36 ± 41 years & age range from 16-56 years , during the period from April 2013 to September 2013, they were attending the out-patient clinic in Medical city – Baghdad Teaching Hospital – Rheumatology</p> <p>They were categorized into three groups after clinical examination and BMD assessment by dual energy x-ray obsorptiometry (DXA) and according to WHO classification. Group 1 included twenty two patients with ankylosing spondylitis without treatment with Tumor Necrosis Factor – α blocker Infliximab . Group 2 included thirty four patients with (1 - 2) doses of the TNF-α blocker . Group 3 represents twenty nine patients with (3 - 7) doses of the TNF-α blocker .</p> <p>Serum bone alkaline phosphates , serum osteocalcin , procollagen type 1, bone sialoprotein , Tartrate-resistant acid phosphatase, and 25 – hydroxy vitamin D3 (25OHD3) Calcifediol levels , all were measured by enzyme- linked immunosorbent assay (ELISA) technique kits.</p>			

All patients were subjected to the questionnaire , to assess Bath Ankylosing Spondylitis Function Index (BASFI) , patients were asked 10 equations to indicate their ability to do some activities .

Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) had been assessed by asking the patients who taking infliximab about the dose to indicate the effectiveness of its medication in relieving the symptoms.

ANOVA one way analysis of variance was applied to compare differences between groups and within groups. All data were given as mean \pm standard deviation (SD). $P < 0.05$ considered statistically significant .

Pearson's correlation (correlation coefficient) test was used to describe the association between the different studied parameters , $p < 0.05$ was statistically significant.

Results:

A significant decrease in mean \pm SD level of Bone Alkaline Phosphatase (BALP) in serum of patients in G3 (142.14 ± 4.68 ng/ml , $p < 0.05$ level) compared with mean \pm SD serum level of Bone Alkaline Phosphatase (BALP) in G1 (167.10 ± 10.37 ng/ml) , and a non significant decrease of mean \pm SD serum level of BALP in G2 (154.08 ± 6.40 ng/ml , $p = 0.205$) compared with mean \pm SD serum level of BALP in G1 (167.10 ± 10.37 ng/ml) .

There is a highly significant elevation in mean \pm SD serum level of osteocalcin in G2 & G3 (4.94 ± 1.21 ng/ml , 11.10 ± 1.94 ng/ml , $p < 0.001$) compared with mean \pm SD serum level of it in G1 (2.72 ± 1.25 ng/ml) .

A highly significant decrease in mean \pm SD serum level of procollagen type 1 in G3 (121.65 ± 4.26 pg/ml , $p < 0.001$) compared with its mean \pm SD serum level in G1 and G2 (167.85 ± 9.28 pg/ml , 154.17 ± 6.12 pg/ml) respectively . In addition there was a non significant decrease in mean \pm SD serum level of procollagen type 1 in G2 (154.17 ± 6.12 pg/ml , $p = 0.149$) compared with its mean \pm SD serum level in G1 (167.85 ± 9.28 pg/ml) .

A non significant decrease in mean \pm SD serum level of sialoprotein in G2 & G3 (5.96 ± 1.29 ng/ml , $p = 0.609$, 5.52 ± 1.14 ng/ml , $p = 0.481$) respectively compared with it in G1 (6.98 ± 1.75 ng/ml) .

There was a highly significant decrease in mean \pm SD serum level of tartrate resistant acid phosphatase in G2 & G3 (2.93 ± 4.67 mIU/ml , 1.89 ± 1.61 mIU/ml , $p < 0.001$) respectively compared with it in G1 (10.91 ± 7.13 mIU/ml) .

There was a non significant increase in mean \pm SD serum level of vitamin D3 in G2 & G3 (24.26 ± 16.51 ng/ml , $p = 0.914$, 24.28 ± 16.16 ng/ml , $p = 0.912$) respectively compared with it in G1 (23.79 ± 14.00 ng/ml) .

There was a highly significant decrease in mean \pm SD of BASFI & BASDAI in G2 & G3 (5.87 ± 1.13 , 3.34 ± 0.585 , P

< 0.001 , 3.34 ± 0.78 , 1.35 ± 0.66 , $P < 0.001$) respectively compared in G1 (7.91 ± 0.78 , 5.51 ± 0.79) .

There was a highly significant increase mean \pm SD of Bone Mineral Density (BMD) of Lumbar Spine (LS) in G2 & G3 (-0.80 ± 0.39 , 3.19 ± 0.91 , $P < 0.001$) respectively compared with that in G1 (-1.63 ± 0.32) .

There was a highly significant increase mean \pm SD of BMD of Hip in G2 & G3 (-0.77 ± 0.38 , -0.06 ± 0.62 , $P < 0.001$) compared with that in G1 (-1.49 ± 0.81) .

BALP showed a high negative significant correlation with serum level of osteocalcin ($r = -0.708$, $p < 0.001$) and with BMD of (LS) and (Hip) ($r = -0.962$, $r = -0.908$, $p < 0.001$) respectively in G1. BALP showed a high positive significant correlation with serum level of procollagen type 1 ($r = 0.922$, $p < 0.001$) in G1.

Osteocalcin showed a high negative significant correlation with serum level of procollagen type 1 ($r = -0.837$, $p < 0.001$) and a high positive significant correlation with BMD of (Hip & LS) ($r = 0.792$, $r = 0.771$, $p < 0.001$) respectively in G1 of patients .

Conclusions:

1. Patients with AS who received infliximab showed significant increases in BMD scores depend on longitudinal period of therapy , long term treatment with infliximab showed beneficial improvement.
2. Many significant correlations were observed between BMD scores of the Hip and spine and biomarkers level in serum of patients with ankylosing spondylitis .