Results

This study was carried out on 40 patients with RA diagnosed according to ACR revised criteria ***(Arnett et al., 1988),*** who receiving disease modifying anti-rheumatic drugs alone or combined with and/or low dose corticosteroids. All patient's demographic, clinical and laboratory data are given in (**Table 1)**

Our patients were divided as follow:

I-Group I:

Comprised 20 RA patients (50%), categorized as having moderate or high disease activity (DAS 28 $\geq$ 3.2).

Twelve of patients (60%) were females and 8 patients (40%) were males. Their ages ranged between 34 to 58 years (mean ± SD 48.2 ± 8.4 years).

The duration of RA ranged between 10 to 18 years (mean ± SD 14.2 ± 2.7 years).

II- Group II:

Comprised 20 RA patients (50%) categorized as having either remission or low disease activity (DAS 28< 3.2).

Twelve of these patients (60%) were males and 8 (40%) were females. Their ages ranged between 40 to 55 years (mean ± SD 46.6 ± 5.45 years).

The RA duration ranged between 2 months to 5 years (mean ± SD 2.6 ± 1.8 years).

Patients of both groups (I,II) were matched as regard age (t=0.7 and P >0.05) and sex (X2=0.9 and P> 0.05) (**Tables 2,3).**

Table (4) and histogram (1): Show comparison between the mean of different clinical variables of patients (group I and group II).

Group I patients had significantly longer disease duration (t= 15.8, p <0.001),worse patients' global assessment of their disease (t=9.5, p<0.05),poorer functional capacity (t=12.7, p <0.001), and higher numbers of tender joint (t =17.3, p<0.001) and swollen (t=37.7,p < 0.001) joint counts than group II patients.

Table (5) and Histogram (2): Show comparison between the mean of the laboratory variables of patients (group I and group II).

As regard the ESR there is a statistically significant difference between the patients of both groups (group I and group II), where t = 4.9 and P <0.05.

Regarding the CRP there is highly significant difference between patients of both groups(group I and group II), where (t= 6.3 and P <0.001).

Regarding seropositivity 12 (60%) patients had positive RF and 8 (40%) patient had negative RF in group I patients while, 8 (40%) patients

had positive RF, 12(60%) patient had negative RF in group II. There is a statistically insignificant difference between the patients of both groups regarding RF, where (X2= 0.9 , P >0.05) **(Table 6 and Histogram 3).**

Radiological severity:

As regard radiological grading of RA disease severity all group I patients were represented in grade III (40%) and grade IV (60%), on the other hand, group II patient were represented in grade I (60%) and grade II (40%) **(Fig 1)**.

Ultrasonographic findings (Fig 2,3,4,5):

A total of 400 MCP joints (200 of group I and 200 of group II) and 80 RSTL (40 in group I and 40 in group II) and 80 USTL (40 in group I and 40 in group II) regions were examined.

Power signals were detected in 124 MCP joints in 24 (60%) patients (20 group I , 4 group II). These 124 MCP joints were graded on PDUS as follows: grade 1 (n = 76), grade 2 (n =36), and grade 3 (n =12).

On the other hand, power signals were detected in 124 RSTL and USTL regions in 36 (90%) patients of both groups. These 124 RSTL and USTL regions were graded on PDUS as follows: grade 1 (n =60), grade 2 (n = 40), and grade 3 (n = 24).

Table (7) and histogram (4): Show comparison between PDUS grading in patients (group I and group II).

There is highly statistically significant difference between patients of both groups (group I and group II) as regard PDUS grading, where (X2=28 and P<0.001).

None of group I patients had either PDUS grade 0 or grade I but 4 (20%) patients had grade II and 16 (80%) patients had grade III **(Histogram 5)**.

On the other hand, 8 (40%) patients in group II represented in PDUS grade I and 12 (60%) patients represented in PDUS grade II. Neither PDUS grade 0 nor grade III were detected in group II patients **Histogram (6).**

Spectral Doppler of RI was determined in 124 MCP joints in 24 (60%) patients (20 of group I and 4 of group II) and in 124 RSTL and USTL regions in 40 (100%) patients of both groups (20 of group I and 20 of group II).

The mean CFS obtained from 14 joints in group I patients was (1.3 ± 0.38) while it was (0.25 ± 0.1) in group II patient with highly statistically significant difference between patients of both groups (group I and group II), where (t = 11.9 and P < 0.001). On the other hand, the mean RI in group I patients was (0.48 ± 0.17) while it was (0.08 ± 0.04) in group II patient with statistically significant difference between patients of both groups where (t = 9.9 and P <0.05) **(Table 8 and histogram 7)**.

Furthermore, on dividing group I patients into moderate (DAS28 >3.2) and high(DAS28 >5.1) disease activity subgroups according to DAS28, 16 (80%) patients classified as having moderate disease activity

while only 4 (20%) patients classified as having high disease activity **(Histogram 8).**

The mean CFS of patients with moderate disease activity was significantly lower than that of patients with high disease activity, where (t = 2.2 and P <0.05). On the other hand, there was statistically insignificant difference between these patients as regards the mean RI, where (t = 1.8 and P >0.05) **(Table 9 and Histogram 9)**.

On dividing group II patients into remission and low disease activity subgroups according to DAS 28, 16 (80%) patients classified as having remission while only 4 patients (20%) classified as having low disease activity **(Histogram 10).**

There is a statistically significant difference between both subgroups (remission and low disease activity) as regard the mean CFS (t = 2.2 and P <0.05) and the mean RI (t = 5.3 and P <0.05) **(Table 10 and Histogram 11).**

In 4 patients (in remission) of group II, PDUS examination of the 14 joints (MCP and wrist) did not reveal flow signals. On the other hand, flow signals in wrists only were detected in 16 patients of group II .12 patients in remission, 4 patients in low disease activity.

On comparing different PDUS grades regards functional capacity in group I patients, there is a highly statistically significant difference, where (t = 12.8 and P <0.001). While on comparing same variables in group II patients, there is a statistically insignificant difference, where (t = 0.9 and P >0.05) **(Tables 11 , 12 and Histogram 12,13).**

On the other hand, on comparing different PDUS grades as regard ESR, there is statistically insignificant difference between different grades in group I patients (t =0.2 and P >0.05), while in group II patients, there is a statistically significant difference between different PDUS grades (grade I and grade II), where (t =3.1 and P<0.05) **(Table 13,14 and Histogram 14,15).**

As regard CRP in group I patient (on comparing different PDUS grades) there is a statistically insignificant difference between different grades (grade II and grade III) (t =0.7and P >0.05), also there is a statistically insignificant difference between different grades (grade I and grade II) in group II , where t =0.5 and P >0.05 (**Tables 13 ,14 and Histogram;14,15).**

More seropositive patients (75%) were represented in PDUS grade III in group 1 patient with statistically significant difference between patients of both grades (I,III) regarding seropositivity , where (t = 4.7 and p<0.05) **(Table 15 and Histogram 16).**

On the other hand, there is a statistically insignificant difference between PDUS grades (I,II) in group II patients regarding seropositivity, where (t = 0.1 and p > 0.05) **(Table 16 and Histogram 17).**

Table (17) and Histogram(18): Show comparison between different grades of radiological severity in group I patient as regards PDUS variables.

There is highly statistically significant difference between grade III and grade IV of radiological severity regarding the mean CFS, where (t

= 11.5) and p<0.001 with the higher mean represented in grade IV(1.58 ± 0.2).

There is a statistically significant difference between grade III and grade IV of radiological severity regarding the mean RI, where (t = 6.1) and p<0.05 with the higher mean represented in grade IV (0.58 ± 0.143).

On the other hand, statistically insignificant difference detected between grade I and grade II of radiological severity as regard the mean CFS t =1.01and p>0.05 and the mean RI (t=1.6 and p>0.05) in group II patients **(Table 18 and Histogram 19).**

Table (19) and Histogram(20,21): Show correlation coefficients of RA disease variables vs PDUS variables in all patients (group I and group II).

Regarding CFS there is highly statistically significant positive correlation of CFS with MHAQ (r=0.850, p=0.00), DAS28 (r=0.915, p=0.00), RF (r=0.428, p=0.006) and Larsen's score (r=0.935, p=0.000) and significant positive correlation with ESR (r=0.378,p=0.016), while non statistically significant correlation with CRP (r=0.142,p=0.382).

As regard RI, there is highly statistically significant positive correlation with MHAQ (r= 0.803, p= 0.000), DAS28 (r= 0.882, p=0.00), RF (r= 0.453, p=0.003) and Larsen's score (r= 0.902,p=0.000) and non statistically significant correlation with ESR (r= 0.232, p=0.150) and CRP (r= 0.158,p= 0.330).