Results

This retrospective study was done included data of 200 patients with chronic hepatitis C virus infection who were treated with interferon and followed up for a minimum of 6 months at the Hepatology Research Center in Tanta Fever Hospital.

Relation between mean AFP and degree of hepatic fibrosis before the start of treatment (Table.7) (Figure.19):

Patients were categorized, based on the degree of hepatic fibrosis, into 5 groups: patients with fibrosis stage-0 (F0) had AFP level of 5.58±1.32 ng/mL, patients with fibrosis stage-1 (F1) had AFP level of 6.24±1.65 ng/mL, those with fibrosis stage-2 (F2) had AFP level 6.60±1.47 ng/mL, those with fibrosis stage-3 (F3) had AFP level 7.99±1.52 ng/mL and fibrosis stage-4 (F4) had AFP level 9.32±2.96 ng/mL. There was insignificant (p.value=0.099) difference of AFP levels among patients with various degrees of hepatic fibrosis.

Relation between mean AFP and Serum glutamic-oxaloacetic transaminase enzyme (SGOT) before the start of treatment (Table.8) (Figure.20):

Patients with normal Serum glutamic-oxaloacetic transaminase enzyme (SGOT) level (≤ 40IU/L) had AFP level 7.52±2.39 ng/mL, patients with serum SGOT level 2-folds than normal (41-80 IU/L) had AFP level 9.66±3.85 ng/mL, patients with serum SGOT level 3-folds more than normal (81-120 IU/L) had AFP level 12.37±4.17 ng/mL and, patients with serum SGOT level 4-folds more than normal (121-160 IU/L) had AFP level 14.80±6.32 ng/mL. There was a significant

(P.value=0.044) difference of AFP levels among patients with various levels of SGOT.

Relation between mean AFP and serum glutamic pyruvic transaminase enzyme (SGPT) before the start of treatment (Table 9) & (Figure 21):

Patients with normal serum SGPT level (≤ 40IU/L) had AFP level 7.99±2.77 ng/mL, patients with serum SGPT level 2-folds than normal (41-80 IU/L) had AFP level 9.89±3.64 ng/mL, patients with serum SGPT level 3-folds more than normal (81-120 IU/L) had AFP level 12.44±4.71 ng/mL and, patients with serum SGPT level 4-folds more than normal (121-160 IU/L) had AFP level 14.61±6.90 ng/mL. There was a significant (P.value=0.042) difference of AFP levels among patients with various levels of SGPT.

Relation between mean AFP and alkaline phosphatase enzyme before the start of treatment (Table 10) & (Figure 22):

Patients with normal serum alkaline phosphatase level (30-150 IU/L) had AFP level 5.47±0.75 ng/mL, patients with serum alkaline phosphatase level 2-folds than normal (151-300 IU/L) had AFP level 5.49±1.01 ng/mL, patients with serum alkaline phosphatase level 3-folds more than normal (301-450 IU/L) had AFP level 5.57±0.96 ng/mL and, patients with serum alkaline phosphatase level 4-folds more than normal (451-600 IU/L) had AFP level 5.86±1.32 ng/mL. There was insignificant (P.value=0.638) difference of AFP levels among patients with various levels of alkaline phosphatase.

Relation between mean AFP and prothrombin concentration before the start of treatment (Table 11) & (Figure 23):

Patients with prothrombin concentration 90% - 100% had AFP level 5.84±1.49 ng/mL, patients with prothrombin concentration 75% - 89% had AFP level 8.43±2.11 ng/mL and those with prothrombin concentration < 75% had AFP level 12.33±4.71 ng/mL. There was significant (P.value=0.047) inverse relation between mean AFP and prothrombin concentration as the decrease in prothrombin concentration associated with increase in AFP levels.

Relation between mean AFP and serum bilirubin before the start of treatment (Table 12) & (Figure 24):

Patients with serum total bilirubin < 2 mg/dl had AFP level 2.60±0.85 ng/mL, patients with serum total bilirubin 2-3 mg/dl had AFP level 4.87±1.35 ng/mL and those with serum total bilirubin >3mg/dl had AFP level 21.70±3.32 ng/mL. There was significant (P.value=0.006) difference in AFP among patients with various serum total bilirubin levels.

Relation between mean AFP and serum albumin before the start of treatment (Table 13) & (Figure 25):

Patients with serum albumin >3.5 g/dl had AFP 4.87±1.35 ng/mL, patients with serum albumin 2.8-3.5 g/dl had AFP 5.86±1.32 ng/mL and those with serum albumin <2.8 g/dL had AFP 7.27±1.96 ng/mL. There was inverse significant (P.value=0.047) difference in AFP among patients with various serum albumin levels.

Relation between mean AFP and polymerase chain reaction (PCR) before the start of treatment (Table 14) & (Figure 26):

Patients were categorized, based on HCV RNA level before the start of treatment, into 5 groups: patients with HCV RNA level $<10^3$ units per milliliter had AFP level 5.42±2.68 ng/mL, patients with HCV RNA level 10^3 -10^4 units per milliliter had AFP level 7.93±1.25 ng/mL, patients with HCV RNA level 10^4-10^5 units per milliliter had AFP level 8.32±3.52 ng/mL, patients with HCV RNA level 10^5-10^6unit's per milliliter had AFP level 8.99±0.85 ng/mL, patients with HCV RNA level $> 10^6$ units per milliliter had AFP level 10.62±1.41 ng/mL. There was significant (P.value =0.049) difference in AFP levels with patients with various HCV RNA levels.

Comparison between main AFP before treatment and at week 24 of treatment according to age of the patients (Table 15) & (Figure 27):

Patients were categorized, based on their age before the start of treatment, into 3 groups: Patients who were < 30 years had AFP level before the start of treatment 10.72±2.38 ng/mL and 3.63±0.741 ng/mL at week 24 of treatment. There was significant (0.014) difference in AFP levels with patients who were 30 years old before treatment and at week 24 of treatment. Patients who were 30-50 years had AFP level before the start of treatment 8.99±0.85 ng/mL and 4.50±1.41 ng/mL at week 24 of treatment. There was significant (0.046) difference in AFP levels with patients who were 30-50 years old before treatment and at week 24 of treatment. Patients who were >50 years had AFP level before the start of treatment 8.59±1.32 ng/mL and 7.27±1.96 ng/mL at week 24 of treatment. There was insignificant (0.074) difference in AFP levels before treatment and at week 24 of treatment with 30-50 years aged patients.

Comparison between main AFP before treatment and at week 24 of treatment according to sex of the patients (Table 16) & (Figure 28):

Patients were categorized, based on their gender, into 2 groups: male patients had AFP level 6.13±2.98 ng/mL before the start of treatment and 4.89±0.98 ng/mL at week 24 of treatment. There was insignificant (p.value=0.054) difference between AFP before the start of treatment and at week 24 of treatment. Female patients had AFP level 8.87±1.32 ng/mL before the start of treatment and 3.42±2.99 ng/mL at week 24 of treatment. There was significant (p.value=0.040) difference between AFP before the start of treatment and at week 24 of treatment.

Correlation between AFP levels and response to treatment at week 12 of treatment (Table 17) & (Figure 29):

Based on HCV RNA level at week 12 treatment, the patients were classified into those who were responders at week 12 "early responders" and those who were non-responders. The AFP level before therapy in responders was 11.49±1.85 nag/mol and its level at 12 week was 5.18±1.36 ng/mL. A significant decrease of AFP level was observed (p.value=0.034) compared to its level before the start of treatment in responders. The AFP level before the start of treatment in non-responders was 12.63±3.21 nag/mol and its level at week 12 of therapy was 9.76±0.77 ng/mL. An insignificant decrease of AFP level was observed (p.value=0.059) compared to its level before the start of treatment in non-responders.

Correlation between AFP levels and responders and non responders to treatment at week 24 of treatment (Table 18) & (Figure 30):

Based on HCV RNA level at week 24 treatment, the patients were classified into those who were responders at week 24 and those who were non-responders. The AFP level before therapy in responders was 11.49±1.85 nag/mol and its level at 24 week was 3.35±0.74 ng/mL. A significant decrease of AFP level was observed (p.value=0.017) compared to its level before the start of treatment in responders. The AFP level before the start of treatment in non-responders was 12.63±3.21 nag/mol and its level at week 24 of therapy was 8.11±1.36 ng/mL. An insignificant decrease of AFP level was observed (p.value=0.052) compared to its level before the start of treatment in non-responders.

Correlation between AFP and responders, non responders and all patients to treatment at 24 weeks (Table 19) & (Figure 31):

Based on HCV RNA level at week 24 treatment, the patients were classified into 3 groups, those who were responders at week 24 and those who were non-responders and all patients. The AFP level before therapy in responders was 11.49±1.85 ng/mL and its level at 24 week was 3.35±0.74 ng/mL. A significant decrease of AFP level was observed (p.value=0.017) compared to its level before the start of treatment in responders. The AFP level before the start of treatment in non-responders was 12.63±3.21 ng/mL and its level at week 24 of therapy was 8.11±1.36 ng/mL. An insignificant decrease of AFP level was observed (p.value=0.052) compared to its level before the start of treatment in non-responders. The AFP level before therapy in all patients was 11.03±2.65 ng/mL and its level at 24 week was 6.23±1.78 ng/mL. A significant decrease of AFP level was observed (p.value=0.042) compared toots level before the start of treatment in all patients.

Table (7) shows the relation between mean AFP and degree of hepatic fibrosis before the start of treatment.

Fibrosis	Mean AFP before treatment±SD (ng/mL)
F0	5.58±1.32
F1	6.24±1.65
F2	6.60±1.47
F3	7.99±1.52
F4	9.32±2.96
F. test	**1.523**
P.value	**0.099**

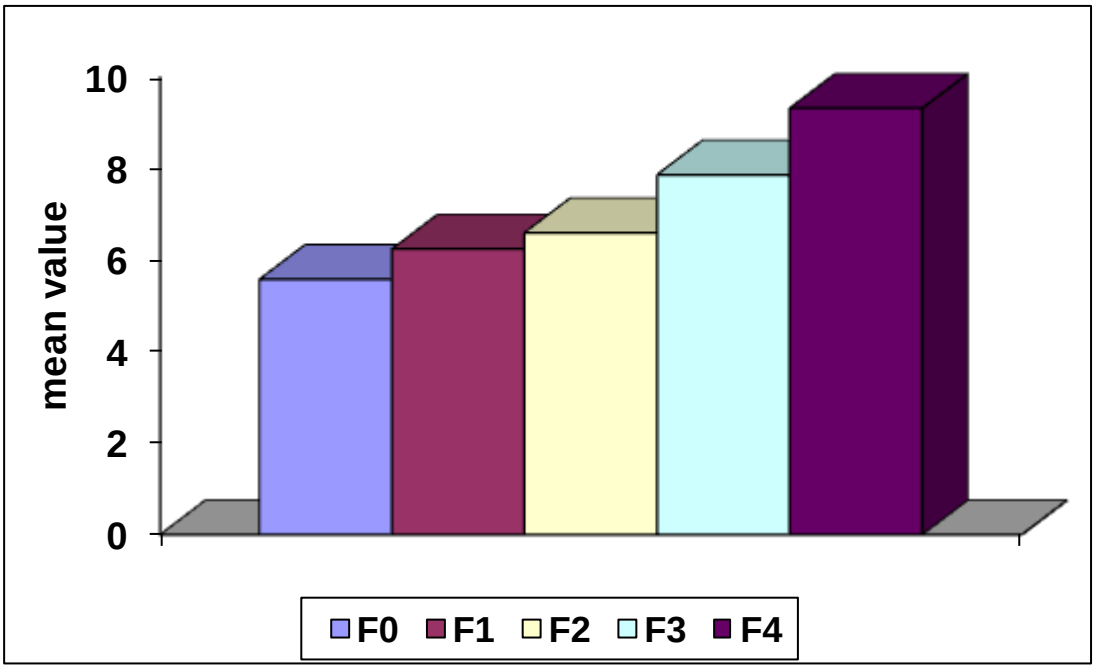

Figure (19) show the relation between mean AFP and degree of hepatic fibrosis before the start of treatment.

Table (8) shows the relation between mean AFP and serum glutamic oxaloacetic transaminase (SGOT) before the start of treatment.

SGOT	Mean AFP before treatment±SD (ng/mL)
Normal (≤ 40 IU/L)	7.52±2.39
2-folds (41-80 IU/L)	9.66±3.85
3-folds (81-120 IU/L)	12.37±4.17
4-folds (121-160 IU/L)	14.80±6.32
F. test	**3.620**
P.value	**0.044**

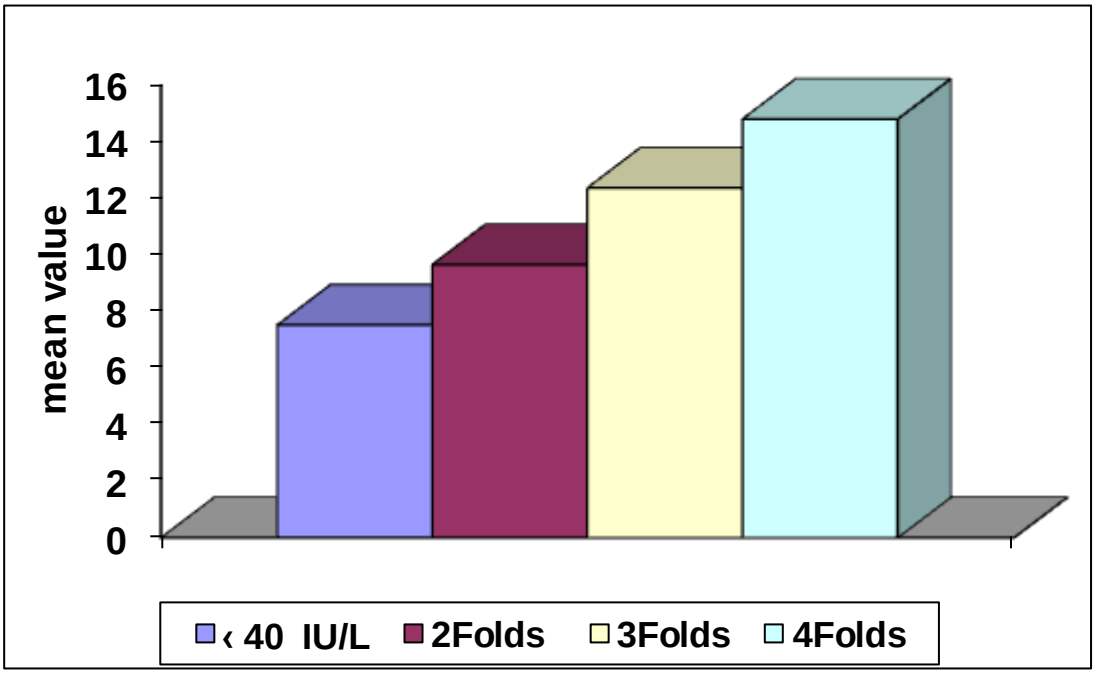

Figure (20) show the relation between mean AFP and serum glutamic oxaloacetic transaminase (SGOT) before the start of treatment.

Table (9) shows the relation between mean AFP and serum glutamic pyruvic transaminase (SGPT) before the start of treatment.

SGPT	Mean AFP before treatment±SD (ng/mL)
Normal (≤ 40 IU/L)	7.99±2.77
2-folds (41-80 IU/L)	9.89±3.64
3-folds (81-120 IU/L)	12.44±4.71
4-folds (121-160 IU/L)	14.61±6.90
F. test	**3.201**
P.value	**0.042**

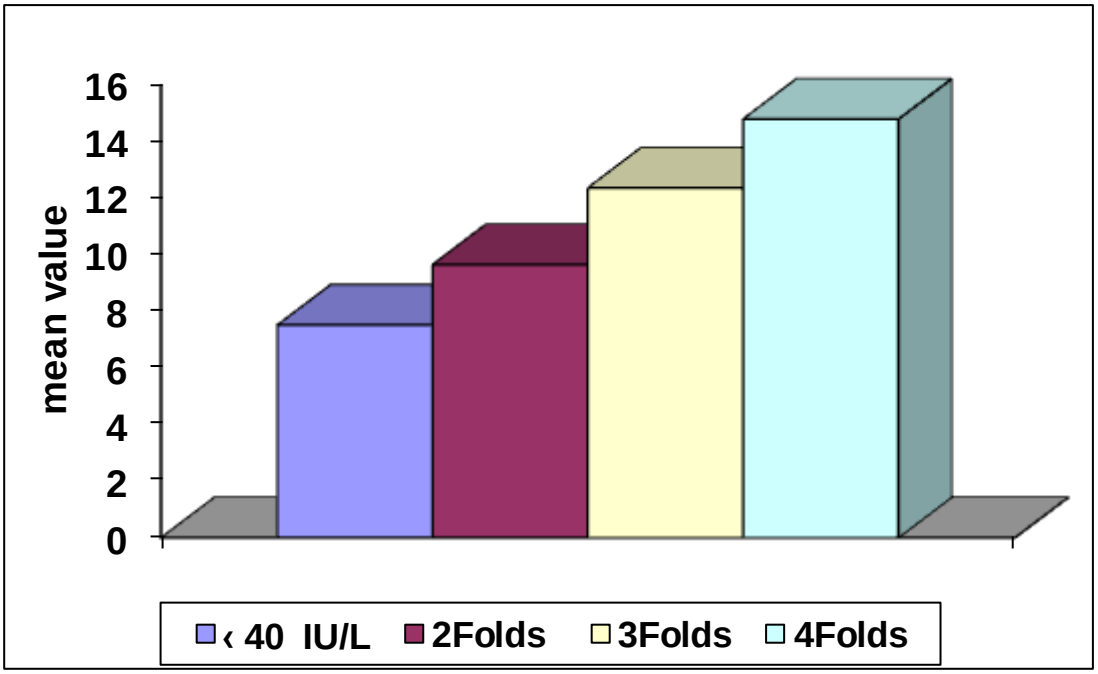

Figure (21) show the relation between mean AFP and serum glutamic pyruvic transaminase (SGPT) before the start of treatment.

Table (10) shows the relation between mean AFP and alkaline phosphatase before the start of treatment.

Alkaline phosphatase	Mean AFP before treatment±SD (ng/mL)
Normal (30-150IU/L)	5.478±0.756
2-folds (151-300IU/L)	5.495±1.012
3-folds (301-450IU/L)	5.572±0.965
4-folds (451-600IU/L)	5.860±1.325
F. test	**0.425**
P.value	**0.638**

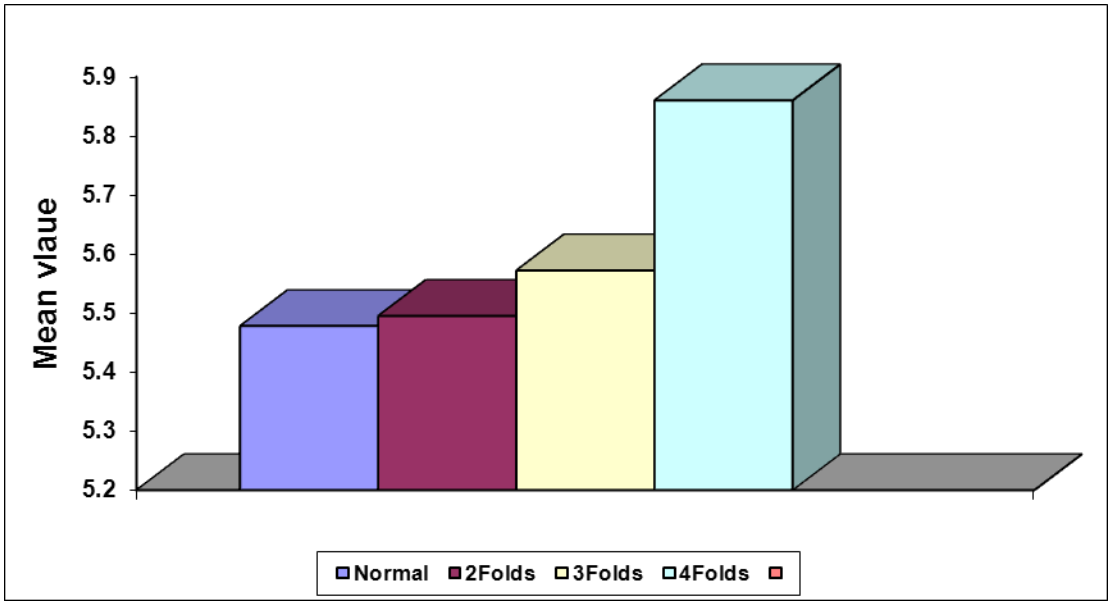

Figure (22) shows the relation between mean AFP and alkaline phosphatase before the start of treatment.

Table (11) shows the relation between mean AFP and prothrombin concentration before the start of treatment.

Prothrombin concentration	Mean AFP before treatment±SD (ng/mL)
90%-100%	5.84±1.49
75%-89%	8.43±2.11
< 75%	12.33±4.71
F. test	**2.325**
P.value	**0.047**

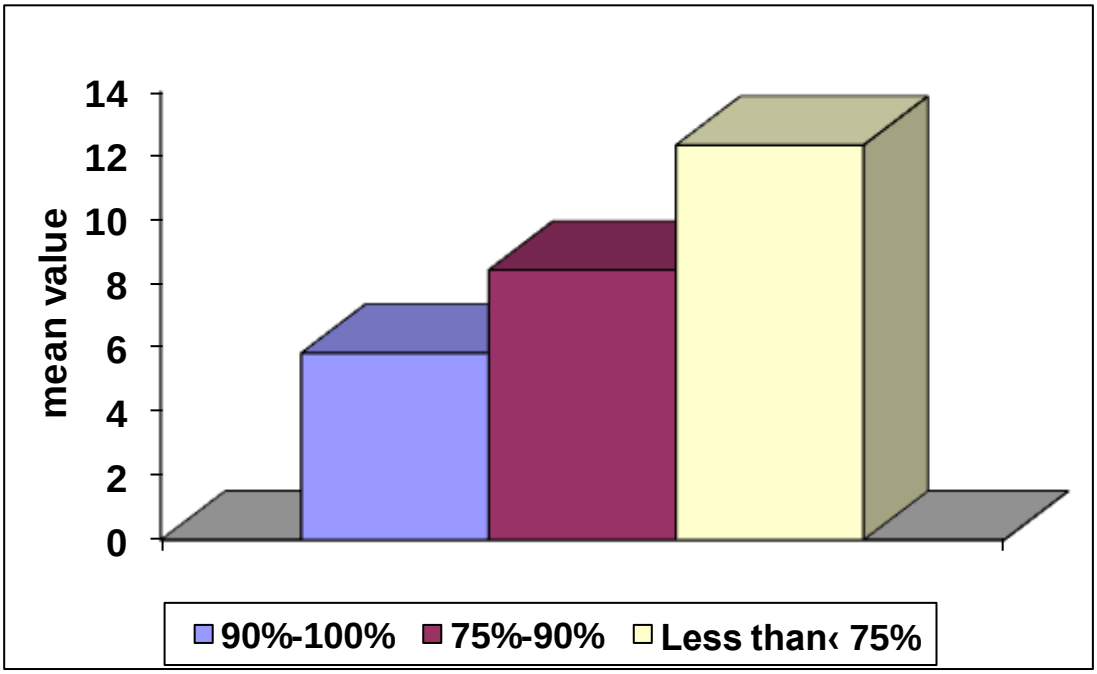

Figure (23) show the relation between mean AFP and prothrombin concentration before the start of treatment.

Table (12) shows the relation between mean AFP and serum bilirubin before the start of treatment.

Bilirubin (mg/dL)	Mean AFP before treatment±SD (ng/mL)
< 2	2.60±0.854
2-3	4.871±1.352
> 3	21.70±3.32
F. test	**14.325**
P.value	**0.006**

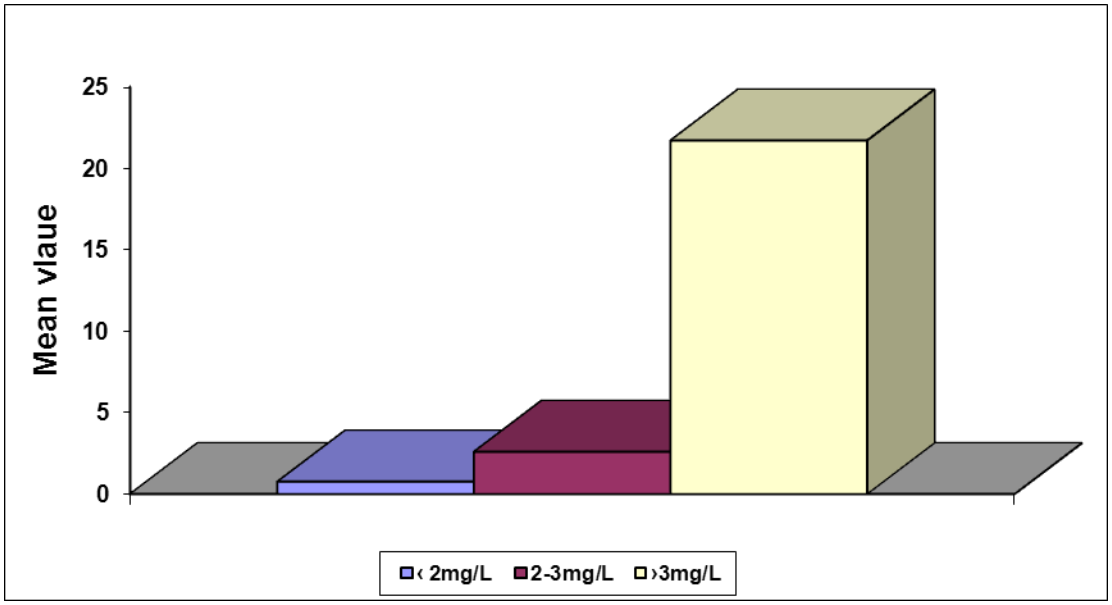

Figure (24) shows the relation between mean AFP and serum bilirubin before the start of treatment.

Table (13) shows the relation between mean AFP and serum albumin before the start of treatment.

Albumin (gm/dl)	Mean AFP before treatment±SD (ng/mL)
>3.5	4.87±1.35
2.8-3.5	5.86±1.32
<2.8	7.27±1.96
F. test	**5.325**
P.value	**0.047**

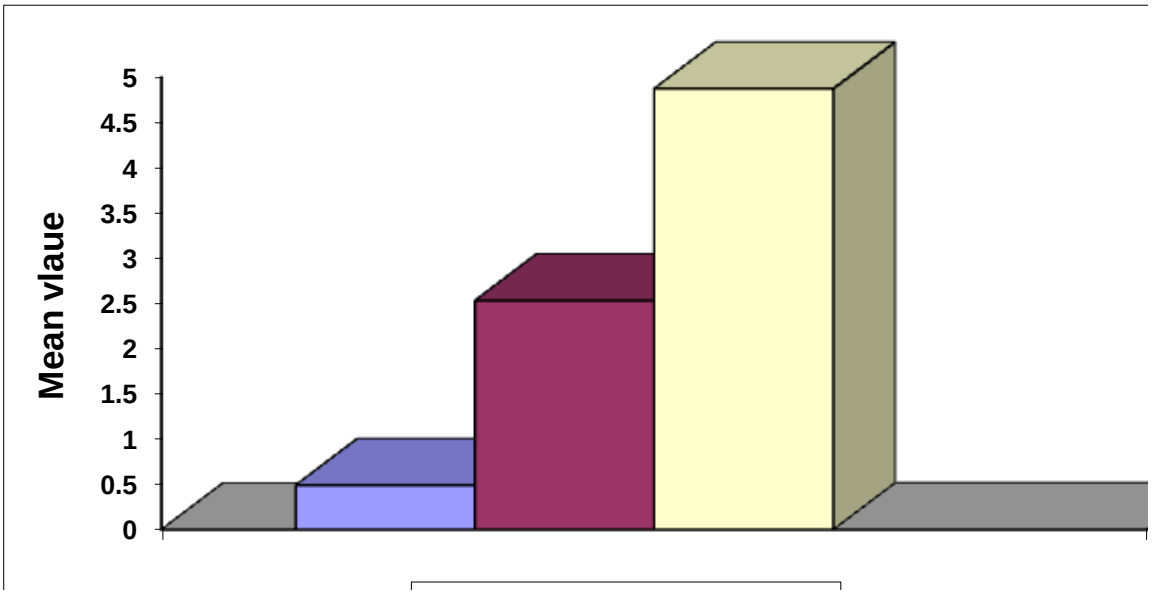

Figure (25) shows the relation between mean AFP and serum albumin before the start of treatment.

Table (14) shows the relation between mean AFP and HCV RNA (by PCR) before the start of treatment.

PCR (unit per milliliter)	Mean AFP before treatment±SD (ng/mL)
$<10^3$	5.42±2.685
10^3 -10^4	7.930±1.250
10^4-10^5	8.325±3.528
10^5-10^6	8.996±0.854
$>10^6$	10.625±1.410
F. test	**2.320**
P.value	**0.049**

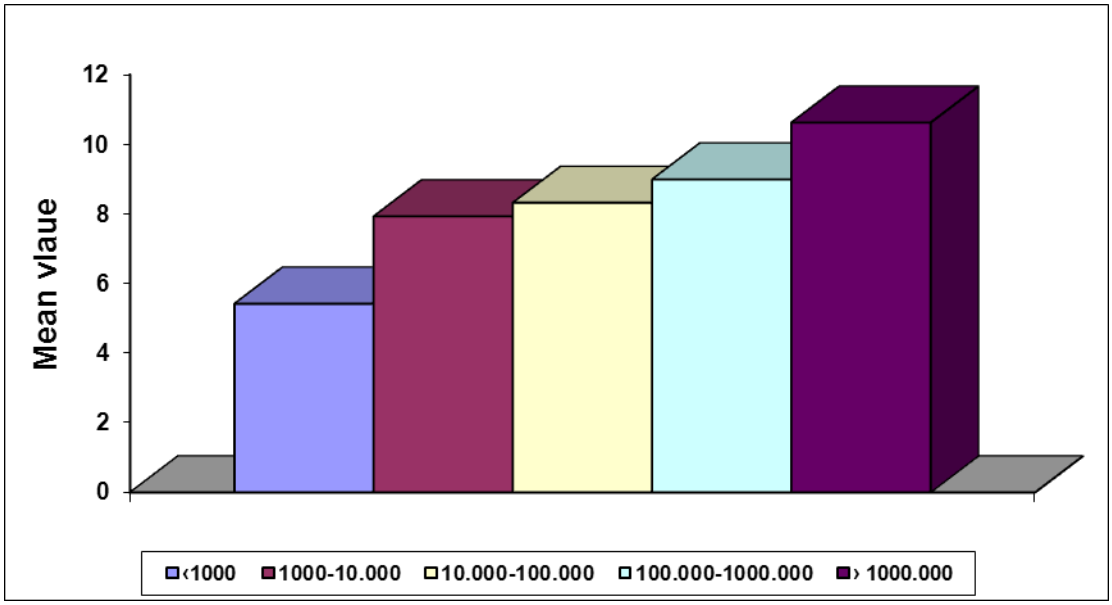

Figure (26) shows the relation between mean AFP and polymerase chain reaction (PCR) before the start of treatment.

Table (15) shows comparison between main AFP before treatment and at week 24 of treatment according to age of the patients.

Age	Mean AFP before treatment± SD (ng/mL)	Mean AFP at week 24 of treatment ±SD (ng/mL)	P.value
< 30 years	10.72±2.38	3.63±0.74	0.014
30-50 years	8.99±0.85	4.50±1.41	0.046
> 50 years	8.59±1.32	7.27±1.96	0.074

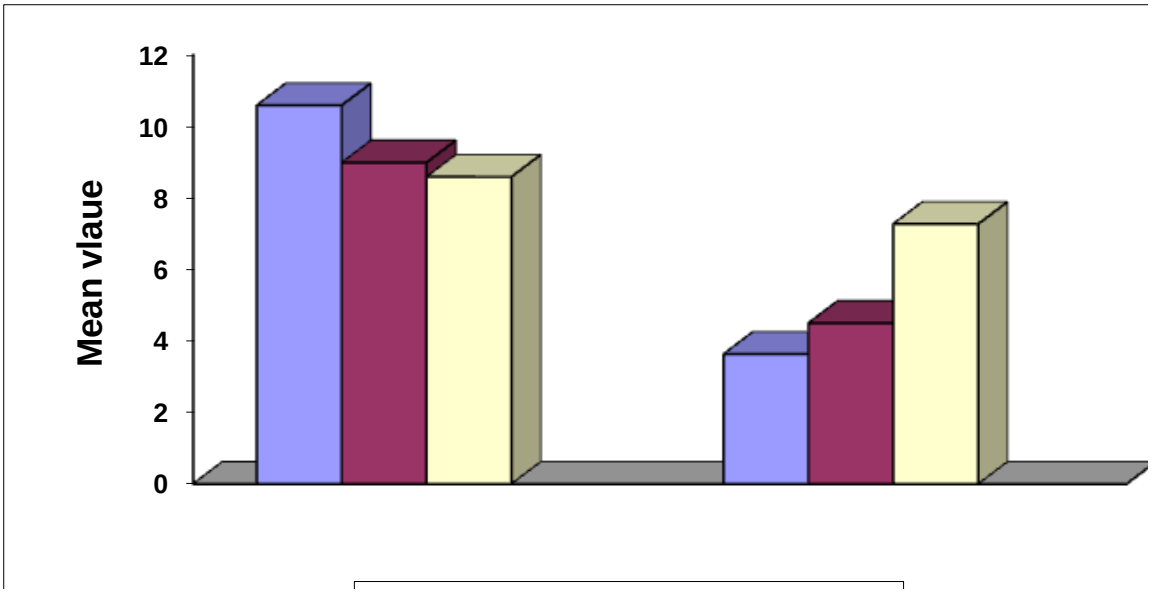

Figure (27) shows comparison between main AFP before treatment and at week 24 of treatment according to age of the patients.

Table (16) shows comparison between main AFP before treatment and at week 24 of treatment according to sex of the patients.

Sex	Mean AFP before treatment ±SD (ng/mL)	Mean AFP at week 24 of treatment ±SD (ng/mL)	P.value
Male	**6.13±2.98**	**4.89±0.986**	**0.054**
Female	**8.87±1.32**	**3.42±2.99**	**0.040**

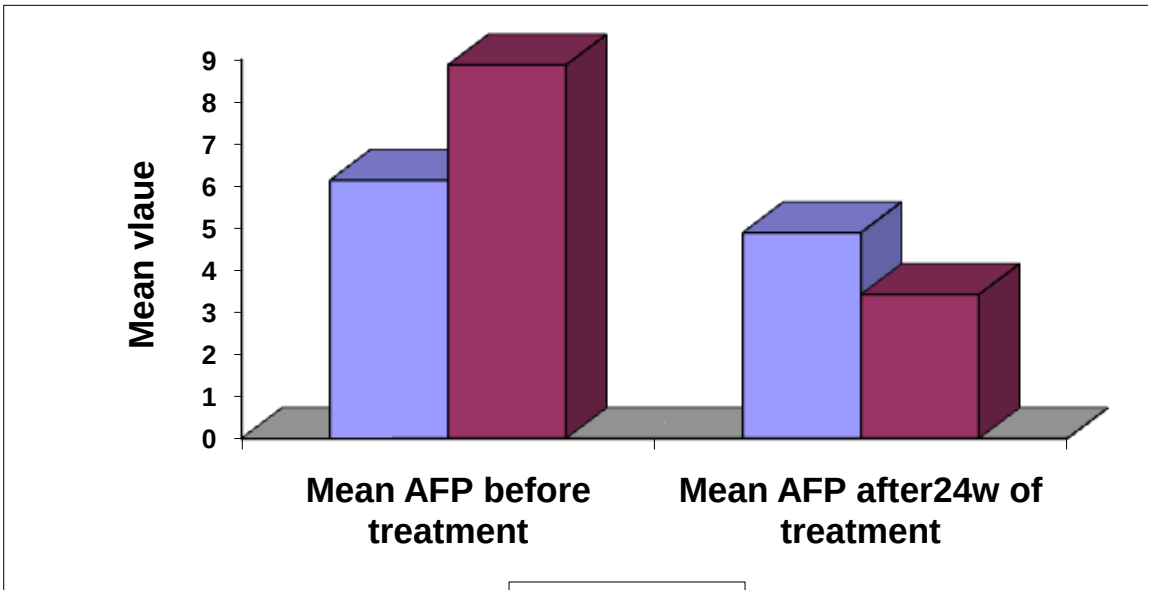

Figure (28) shows comparison between main AFP before treatment and at week 24 of treatment according to sex of the patients.

Table (17) shows the correlation between AFP levels and response to treatment at week 12 of treatment.

PCR	AFP before treatment± SD (ng/mL)	AFP after12w of treatmen± SD (ng/mL)	P.value
Respond	**11.49±1.85**	**5.18±1.365**	**0.034**
Non respond	**12.63±3.21**	**9.76±0.771**	**0.059**

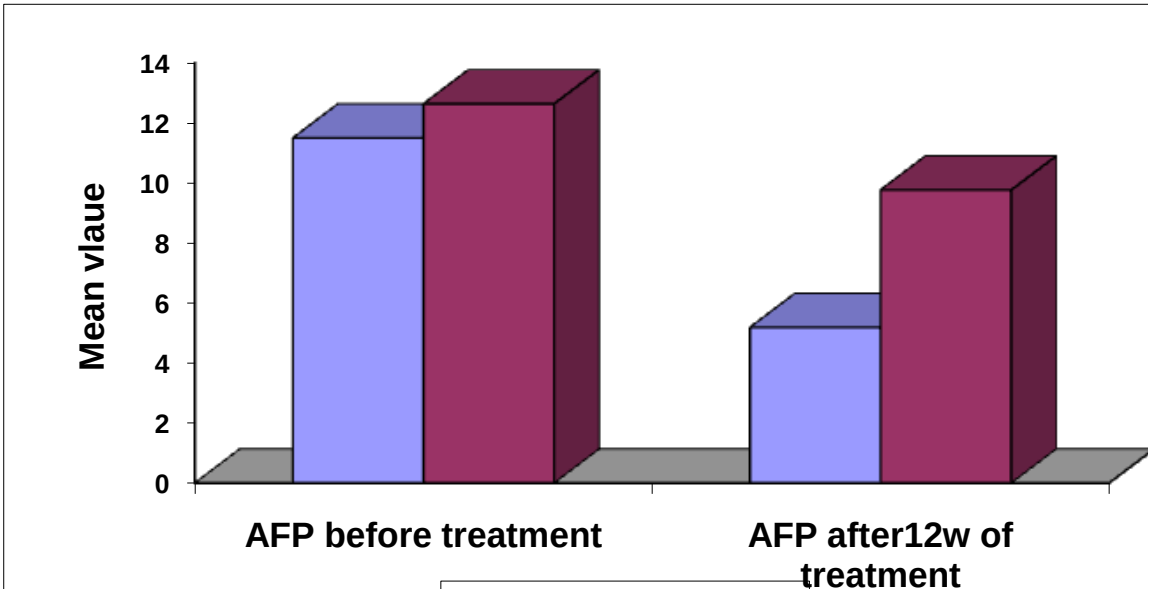

Figure (29) shows the correlation between AFP levels and response to treatment at week 12 of treatment.

Table (18) shows the correlation between AFP levels and responders and non responders before the start of treatment and at week 24 of treatment.

PCR	AFP before treatment± SD (ng/mL)	AFP after 24w of treatment± SD (ng/mL)	P.value
Respond	**11.49±1.85**	**3.35±0.741**	**0.017**
Non respond	**12.63±3.21**	**8.11±1.360**	**0.052**

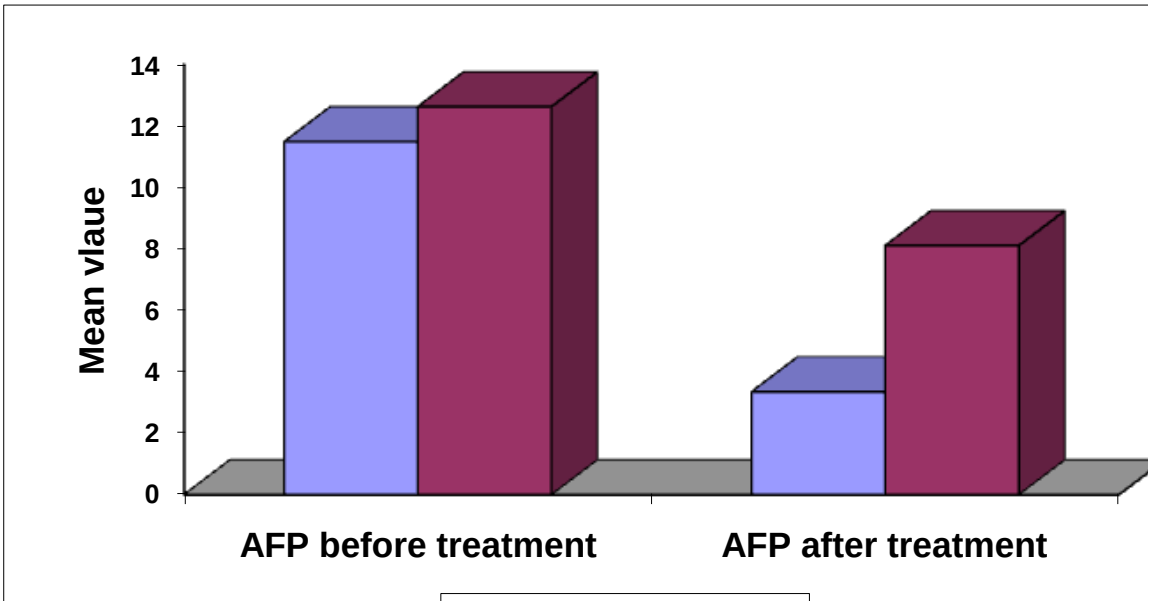

Figure (30) shows the correlation between AFP levels and responders and non responders before the start of treatment and at week 24 of treatment.

Table (19) shows the correlation between AFP and responders, non responders and all patients before the start of treatment and at week 24 of treatment.

PCR	AFP before treatment± SD (ng/mL)	AFP at week 24 of treatment± SD (ng/mL)	P.value
Respond	**11.49±1.85**	**3.35±0.741**	**0.017**
Non respond	**12.63±3.21**	**8.11±1.360**	**0.052**
All patients	**11.033±2.652**	**6.231±1.785**	**0.042**

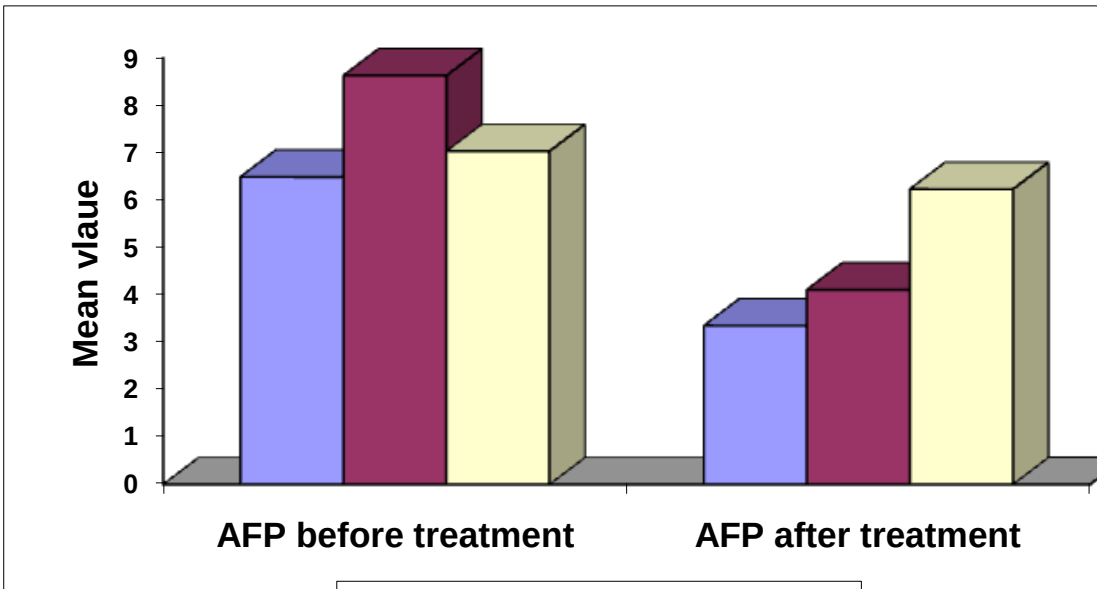

Figure (31) shows the correlation between AFP and responders, non responders and all patients before the start of treatment and at week 24 of treatment.