Results

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The aim of this study was to estimate serum Resistin levels and to correlate these levels with the various clinical and biochemical results. To this end, we studied three groups:

1- Group 1 consisting of 18 patients with chronic HCV but no evidence of cirrhosis.

2- Group 2 consisting of 18 patients with chronic HCV and evidence of cirrhosis.

3- Group 3 consisting of 16 controls with no evidence of any liver disease.

Table 1: Description and comparison of personal & clinical data among patients with chronic HCV, patients with HCV + cirrhosis and controls

		Group						P*	Sig
		Chronic HCV (group 1)		HCV and Cirrhosis (group 2)		Control (group 3)			
		N	%	N	%	N	%		
Sex	Male	14	77.8%	15	83.3%	8	50%	.075	NS
	Female	4	22.2%	3	16.7%	8	50 %		
Duration of liver disease (yrs)	=<5 Years	8	47.1%	8	47.1%	....	.....	1.00	NS
	>5 Years	9	52.9%	9	52.9%	.....	.....		
liver	Normal	3	16.7%	2	11.1%	16	100%	.0001	HS
	Mild Enlargement	8	44.4%	9	50.0%	0	.0%		
	Moderate Enlargement	7	38.9%	7	38.9%	0	.0%		
Spleen	Normal	4	22.2%	2	11.1%	16	100 %	.0001	HS
	Mild Enlargement	8	44.4%	8	44.4%	0	.0%		
	Moderate Enlargement	6	33.3%	8	44.4%	0	.0%		
Ascites	Absent	18	100.0%	0	.0%	16	100%	.0001	HS
	Mild	0	.0%	9	50.0%	0	.0%		
	Moderate	0	.0%	9	50.0%	0	.0%		

Table 1 shows a comparison between the personal and clinical data of the studied groups. The number of males was 14 (77.8%) in group 1, 15 (83.3%) in group two and 8 (50%) in group 3. There was no significant difference between groups 1 and 2 as regards duration of the disease (less or more than 5 years), the presence of liver or spleen enlargement. The only significant difference between groups 1 and 2 is the presence of ascites.

Table 2: Description and comparison of age and duration of liver disease among patients with chronic HCV, patients with HCV + cirrhosis and controls

	Group									P	Sig
	Chronic HCV			HCV and Cirrhosis			Control				
	Mean	±SD	SEM	Mean	±SD	SEM	Mean	±SD	SEM		
Age	56.5	10.8	2.5	50.7	9.5	2.2	48.5	13.5	3.4	.119*	NS
Duration of liver disease (yrs)	5.5	3.7	.9	6.0	3.0	.7	---	---	---	.641**	NS

***ANOVA test**

***Independent T-test**

Table 2 shows the comparison between the age and duration of the disease in years and again, this shows no significant differance between the age of all three groups (P=0.119) and also no differance between the duration of the disease in years between groups 1 and 2 (P=0.641).

Table 3: Description and comparison of laboratory data among patients with chronic HCV, patients with HCV + cirrhosis and controls

	Group									P	Sig	LSD
	Chronic HCV (Gr1)			HCV and Cirrhosis (Gr2)			Control (Gr3)					
	Mean	±SD	SEM	Mean	±SD	SEM	Mean	±SD	SEM			
Albumin (gm)	3.3	.4	.1	2.5	.3	.1	4.1	.4	.1	.0001	HS	Gr1 Vs Gr2 Gr1 Vs Gr3 Gr2 Vs Gr3
Bil (mg)	1.5	1.0	.2	3.2	2.3	.5	.8	.2	.0	.0001	HS	Gr1 Vs Gr2 Gr2 Vs Gr3
INR (sec)	1.4	.2	.0	1.4	.2	.1	1.0	.1	.0	.0001	HS	Gr1 Vs Gr3 Gr2 Vs Gr3
Hb (gm/ mm3)	10.9	2.2	.5	10.3	1.8	.4	12.2	1.6	.4	.02	S	Gr2 Vs Gr3
TLC (1000/ mm3)	8.8	3.3	.8	7.3	3.1	.7	7.2	1.8	.5	.174	NS	
Platelets (1000/ mm3)	154.8	81.7	19.3	115.6	44.8	10.6	190.3	23.3	5.8	.001	HS	Gr2 Vs Gr3
Creatinine (mg)	1.0	.3	.1	1.2	.6	.1	1.1	.1	.0	.127	NS	
BUN (mg/ dl)	16.7	10.6	2.5	26.4	19.1	4.5	10.1	1.6	1.1	0.39	S	Gr1 Vs Gr2 Gr1 Vs Gr3

***ANOVA test**

Table 3 shows the comparison between eight different laboratory parameters in groups 1, 2 and 3 (control). These results can also be seen in figure 1. Important results in this table are

between groups 1 and 2 and are as follows:

-Serum albumin is significantly lower in the two diseased groups versus control.

-Serum bilirubin is significantly higher in group 2 compared to groups 1 and 3.

-INR is significantly higher in groups 1 and 2 versus group 3.

Other important results in this table are between groups 2 and 3 (control) as such:

-Haemoglobin levels and platelet count are significantly lower in group 2 versus 3.

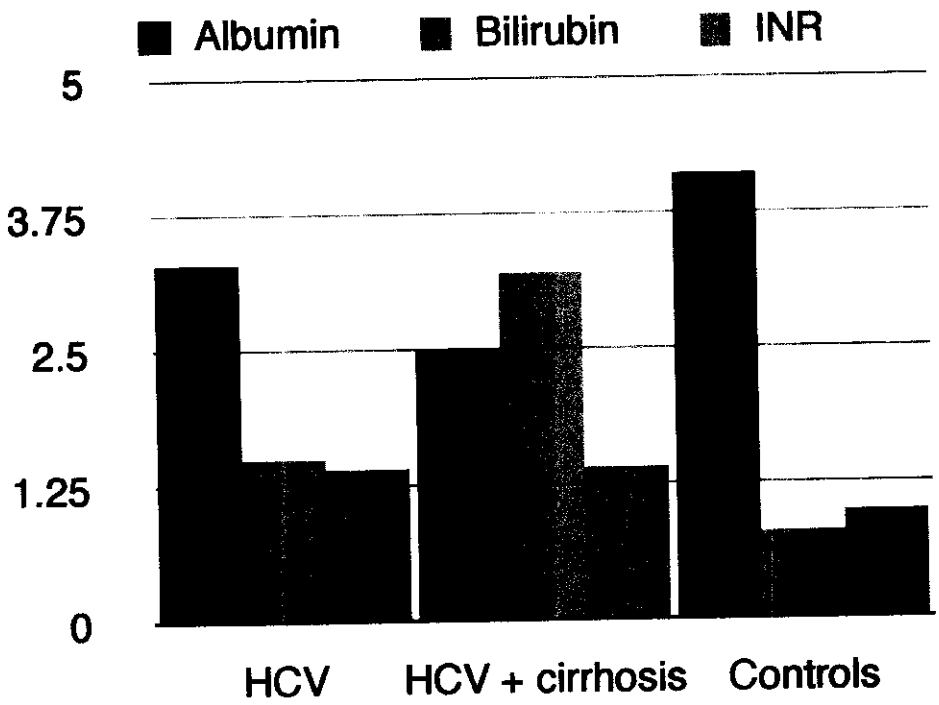

Figure 1

Table 4: Description and comparison of clinical data among patients with Child A, B and C

		Child classification						P*	Sig
		Child Class A		Child Class B		Child Class C			
		N	%	N	%	N	%		
Duration of liver disease	=<5 Years	6	42.9%	4	57.1%	6	46.2%	.906	NS
	>5 Years	8	57.1%	3	42.9%	7	53.8%		
liver	Normal	2	13.3%	1	12.5%	2	15.4%	.904	NS
	Mild Enlargement	7	46.7%	5	62.5%	5	38.5%		
	Moderate Enlargement	6	40.0%	2	25.0%	6	46.2%		
Spleen	Normal	3	20.0%	1	12.5%	2	15.4%	.819	NS
	Mild Enlargement	8	53.3%	3	37.5%	5	38.5%		
	Moderate Enlargement	4	26.7%	4	50.0%	6	46.2%		
Ascites	Absent	15	100.0%	3	37.5%	0	.0%	.0001	HS
	Mild	0	.0%	5	62.5%	4	30.8%		
	Moderate	0	.0%	0	.0%	9	69.2%		

***Fisher exact**

Table 4 shows the comparison between the various groups of patients when classified according to the Child-Pugh Classification, the only significant differance between all 3 groups was the presence or abscence of ascites.

Table 5: Description and comparison of laboratory data among patients with Child A, B and C

	Child Class A (Gr1)			Child Class B (Gr2)			Child Class C (Gr3)			P*	Sig	LSD
	Mean	±SD	SEM	Mean	±SD	SEM	Mean	±SD	SEM			
Albumin	3.4	.3	.1	3.0	.4	.1	2.4	.3	.1	.0001	HS	Gr1 Vs Gr2 Gr1 Vs Gr3 Gr2 Vs Gr3
Bil	1.1	.2	.1	2.7	1.1	.4	3.6	2.5	.7	.001	HS	Gr1 Vs Gr2 Gr1 Vs Gr3
INR	1.4	.2	.1	1.5	.2	.1	1.4	.3	.1	.742	NS	

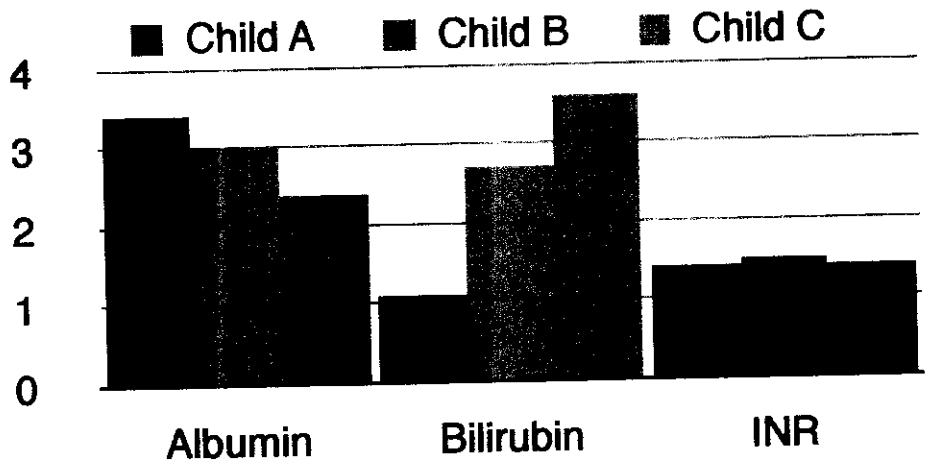

Figure 2

Table 5 and figure 2 show also a comparison between the various groups of the Child-Pugh Classification as regards laboratory results. The significant differance in the serum albumin and bilirubin are a reflection of the disease classification regarding the grade of liver insufficiency in each group.

Table 6: Description and comparison of CBC among patients with Child A, B and C

	Child Class A (Gr1)			Child Class B (Gr2)			Child Class C (Gr3)			P*	Sig	LSD
	Mean	±SD	SEM	Mean	±SD	SEM	Mean	±SD	SEM			
Hb	11.3	1.9	.5	10.6	2.4	.8	9.8	1.7	.5	.156	NS	
TLC	9.6	2.9	.7	6.2	2.4	.8	7.5	3.4	1.0	.037	S	Gr1 Vs Gr2
Platelets	160.4	79.2	20.5	130.1	63.2	22.3	109.2	47.6	13.2	.135	NS	

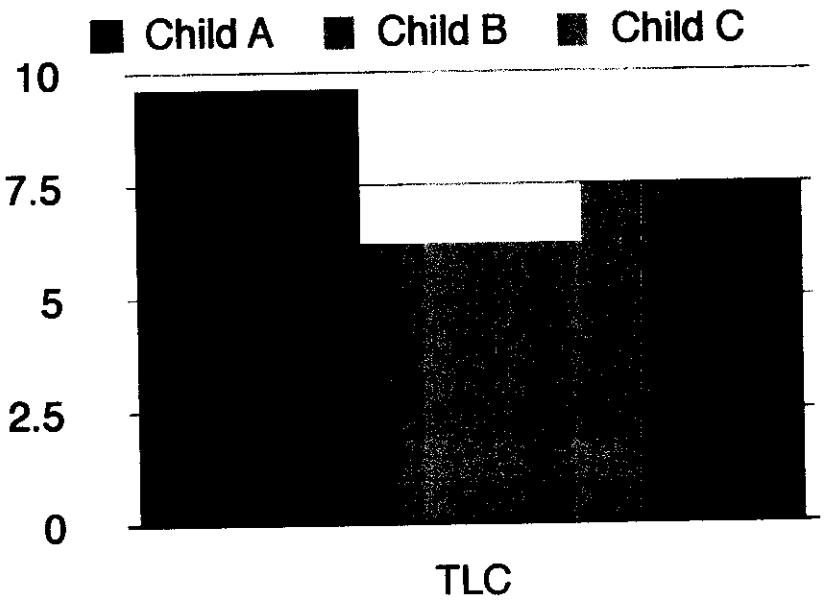

Figure 3

The final results in this area are a comparison between the haematologiacal results of the various Child groups (A, B andC) as shown in table 6 and figure 3. The haemoglobin levels and platelet count were not significant but the total leucocytic count showed a significant difference between Child A and Child B (P=0.037).

Table 7: Description and comparison of resistin among patients with Chronic HCV, patients with HCV + Cirrhosis and controls

	Group									P*	Sig	
	Chronic HCV (Gr1)			HCV and Cirrhosis (Gr2)			Control (Gr3)					
	Mean	±SD	SEM	Mean	±SD	SEM	Mean	±SD	SEM			
Resistin	7.9	2	0.5	9.6	1.8	0.4	2.9	1.9	0.5	.0001	HS	Gr1 Vs Gr2 Gr1 Vs Gr3 Gr2 Vs Gr3

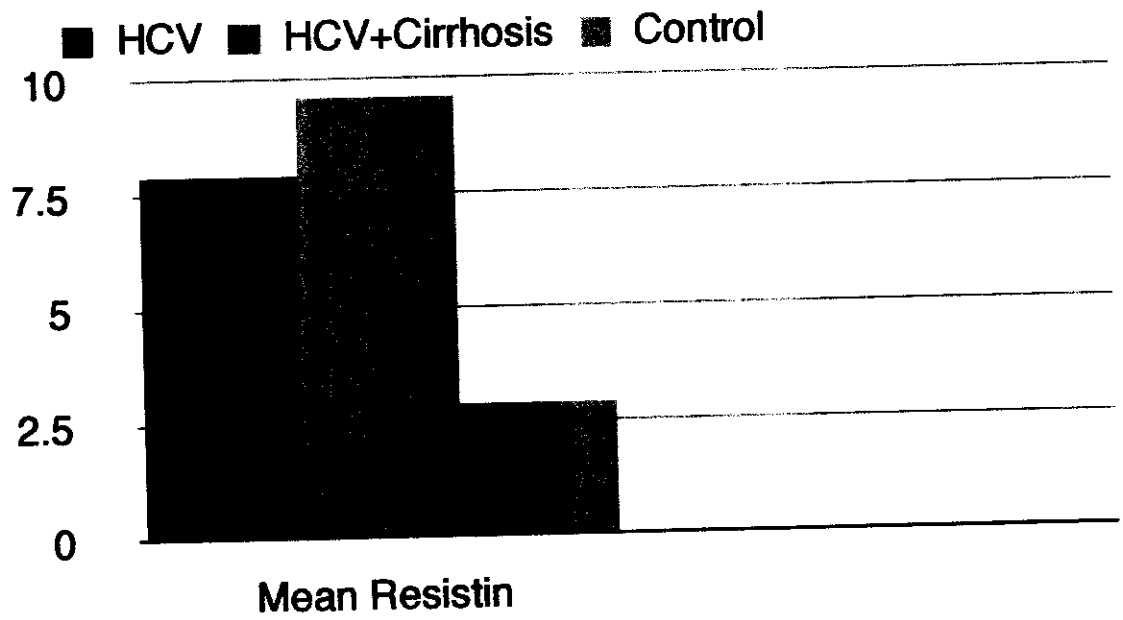

Figure 4

The results of estimating serum resistin and their correlations are the objective of this study and are set in a series of tables. The first of these results are shown in table 7 and figure 4 and shows the serum resistin levels in groups 1 (Chronic HCV), 2 (Chronic HCV with cirrhosis) and group 3 (Controls). The mean serum resistin levels were 7.9 ng/ml in group 1, 9.6 ng/ml in group 2 and 2.9ng/ml in group 3. Resistin is significantly higher in the two diseased groups compared to control. Also group 2 is significantly higher than group 1.

Table 8: Description and comparison of resistin among patients with Child class A, class B, class C and controls

	control (Gr1)			Child Class A (Gr2)			Child Class B (Gr3)			Child Class C (Gr4)			P*	Sig	LSD
	Mean	±SD	SEM	Mean	±SD	SEM	Mean	±SD	SEM	Mean	±SD	SEM			
Resistin	2.9	1.9	0.5	8.2	2	0.5	9.1	2.2	0.8	9.3	2	0.6	.001	HS	Gr1 VsGr2 Gr1 Vs Gr3 Gr1 Vs Gr4

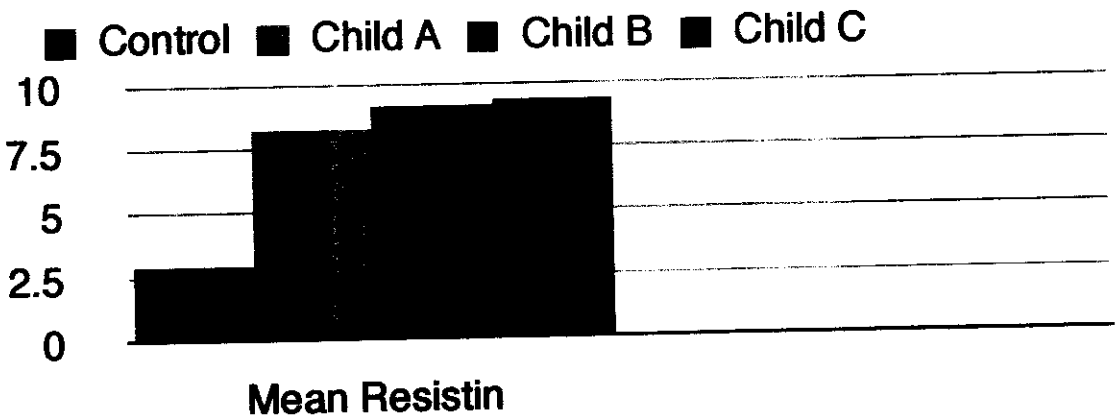

Figure 5

Table 8 shows the patients groups according to the Child-Pugh classification Child A, B and C and the relation of these groups to the serum resistin levels (also figure 5). Serum resistin is significantly higher in the three diseased groups compared to control. There is gradual elevation matching with the worstening of liver status (C shows the highest level followed by B then A.

The next three tables show comparisons between serum resistin levels and both sex of the patients and duration of the disease.

Table 9: Description and comparison of resistin among patients with =<5 Years and >5 Years liver disease duration

	liver						P*	Sig
	=<5 Years			>5 Years				
	Mean	±SD	SEM	Mean	±SD	SEM		
Resistin	8.5	1.9	0.5	8.9	2.3	0.5	.537	NS

***Independent Samples Test**

In table 9 the relation between the duration of the disease and the serum resistin was found to be non-significant (P=0.537)

Table 10: Comparison between male and female controls as regards resistin and male and female cases as regards resistin

	controls						P*	Sig	cases						P*	Sig
	Male			Female					Male			Female				
	Mean	±SD	SEM	Mean	±SD	SEM			Mean	±SD	SEM	Mean	±SD	SEM		
Resistin	4.1	2	0.7	1.8	0.4	0.1	.014	S	8.8	2.1	0.4	8.9	2.2	0.9	.920	NS

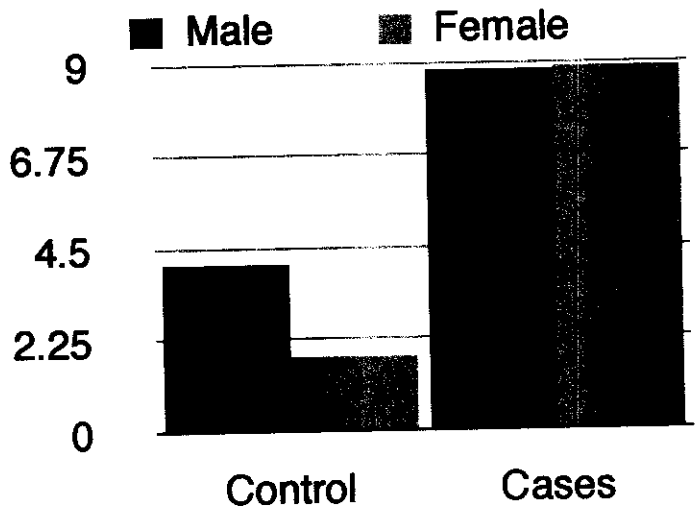

Figure 6

Table 10 and table 11 show serum resistin levels in relation to sex. In table 10 and figure 6, a comparison of serum resistin levels between male and female controls was found to be significant (Mean for males was 4.1 ng/ml and mean for females was 1.8 ng/ml. However, the relationship between male and female cases was not significant.

Table 11: Description and comparison of resistin among male cases and controls and female cases and controls

	Males						P*	Sig	Females						P*	Sig
	Cases			Controls					Cases			Controls				
	Mean	±SD	SEM	Mean	±SD	SEM			Mean	±SD	SEM	Mean	±SD	SEM		
Resistin	8.8	2	0.4	4.1	2	0.7	.0001	HS	8.9	2.2	0.9	1.8	0.4	0.1	.001	HS

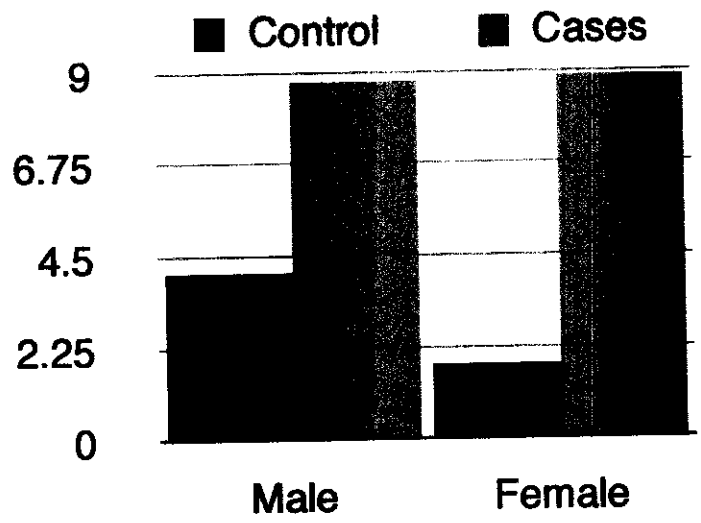

Figure 7

Table 11 and figure 7 show the relationship between male cases (mean 8.8 ng/ml) and male controls (mean 4.1 ng/ml) which is significantly higher in cases compared to controls (P=0.001) with a similar significant result between female cases and female controls (P=0.001).

Table 12: Description and comparison of resistin according to degree of liver enlargement, spleen enlargement and ascites

			Resistin		P	Sig	Post hoc test
		Mean	+/-SD	SEM			
Liver	Normal	9	2.7	1.2	0.339	NS	
	Mild enlargement	8.3	2.4	0.6			
	Moderate enlargement	9.4	1.4	0.4			
Spleen	Normal	8.8	2	0.8	0.710	NS	
	Mild enlargement	9	2.4	0.6			
	Moderate enlargement	8.5	1.8	0.5			
Ascites	Absent (Gr1)	7.9	2	0.5	0.003	HS	Gr2 vs Gr1 Gr2 vs Gr3
	Mild (Gr2)	10.7	1	0.4			
	Moderate (Gr3)	8.5	1.8	0.6			

***ANOVA test**

The possible relation between the serum resistin levels and the various clinical aspects can be seen in table 12 and figure 8. There was no significant correlation between serum resistin levels and the degree of hepatic or splenic enlargement (P=0.339 and P=0.710). There was however, a highly significant correlation between values of serum resistin and both the presence of ascites and the degree of ascites (P=0.003).

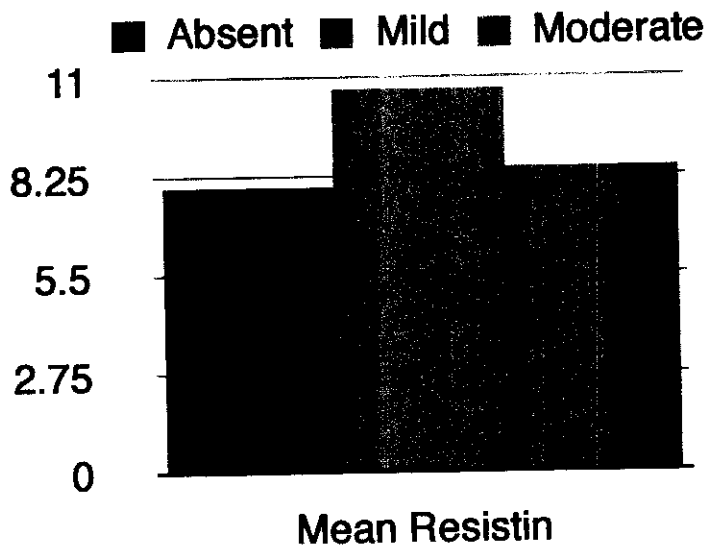

Figure 8

Table 13:Correlations between resistin and all parameters among cases

	Resistin		
	r	P	Sig
Age	0.219	0.198	NS
Duration of liver disease (yrs)	0.07	0.694	NS
Albumin	-0.205	0.229	NS
Bil	0.272	0.108	NS
INR	-0.192	0.262	NS
Hb	0.252	0.139	NS
TLC	-0.042	0.809	NS
Platelets	0.008	0.963	NS
Creatinine	0.263	0.122	NS
BUN	0.324	0.054	NS

Table 14: Correlations between resistin and all parameters among controls

	Resistin		
	r	P	Sig
Age	-0.388	0.138	NS
Albumin	-.598(*)	0.014	S
Bil	0.036	0.894	NS
INR	0.008	0.977	NS
Hb	0.186	0.489	NS
TLC	-0.109	0.688	NS
Platelets	-0.232	0.387	NS
Creatinine	0.275	0.303	NS
BUN	0.017	0.949	NS

The last two tables deal with the different correlations between the serum Resistin levels and the various laboratory parameters. In table 13 we can see that all these parameters did not show any positive correlation with the serum resistin levels. In table 14 and figure 9, all the parameters also do not correlate with the serum resistin levels except for serum albumin which showed a positive correlation.