Table 1

Comparison between case and control groups as regards age and sex

	Groups				Total		Test of significance	P value
	Case (N = 25)		Control (N = 20)					
	X ± SD		X ± SD		X ± SD			
Age	5.2 ± 3.54		4.2 ± 2.97		5.03 ± 3.42		**t- test 1.3**	**>0.05 NS**
	No	**%**	**No**	**%**	**No**	**%**		
Sex							X^2	
○ **Male**	15	60.0	12	60.0	18	60.0	**0**	**>0.05 NS**
○ **Female**	10	40.0	8	40.0	12	40.0		

This table shows that both groups (the diseased one &the control) were matched for age and sex.

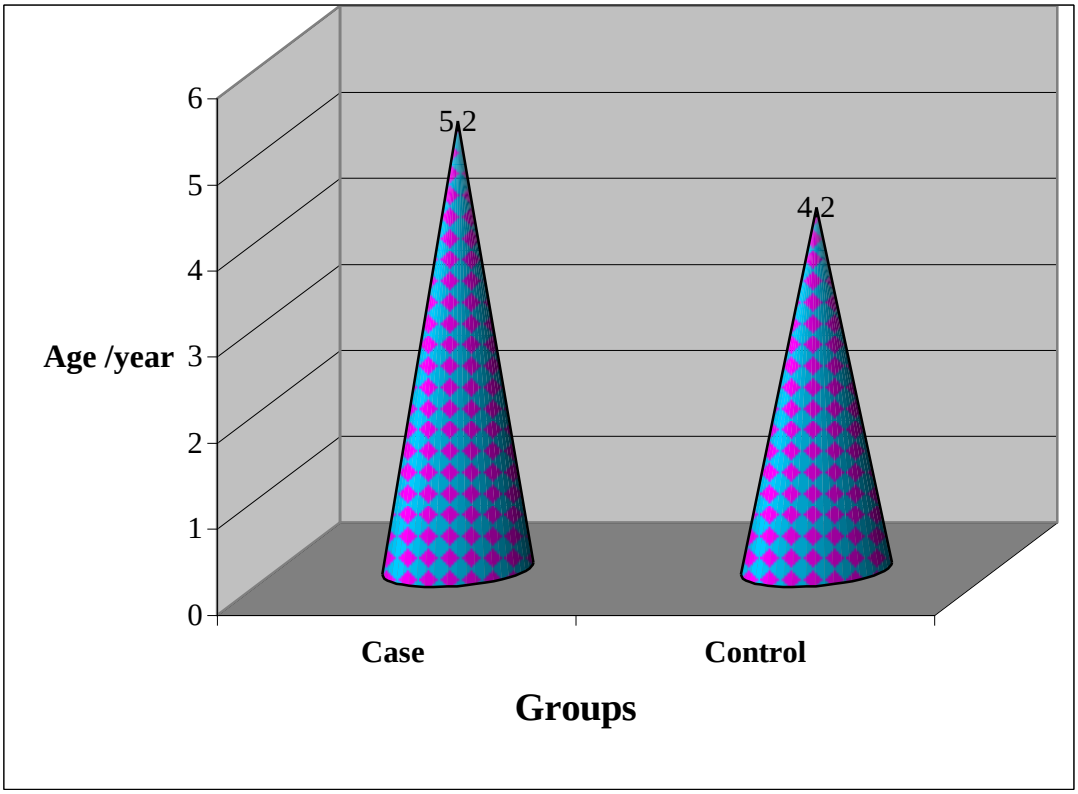

Fig (6): distribution of mean age in both the diseased group and control group

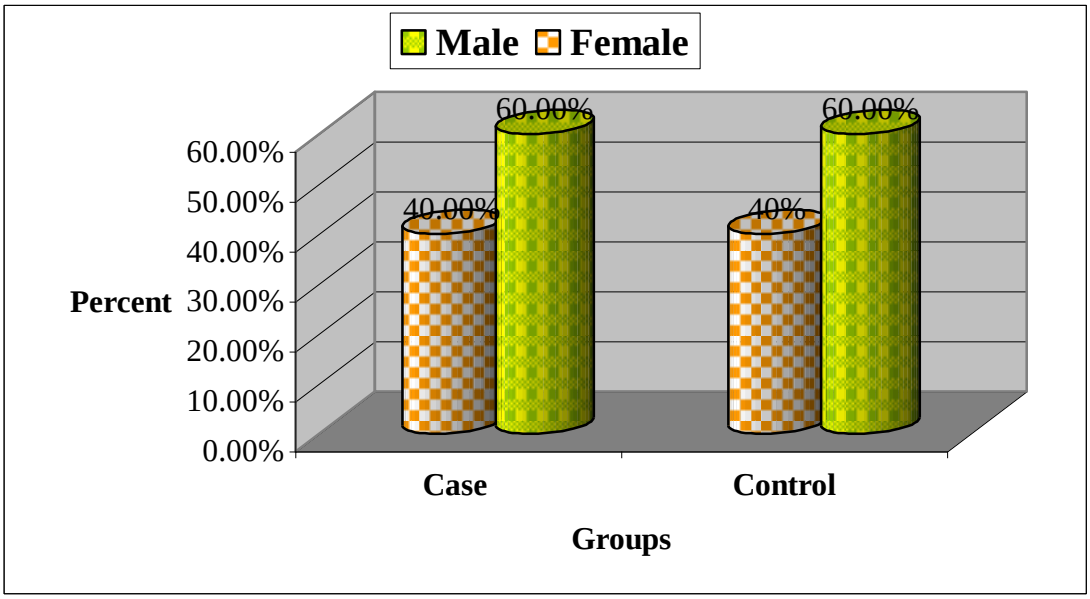

Fig (7): Distribution of the sex of the diseased group and the control group with the percent of both sexes in each group.

Table 2

Number and percent of different GSD types in studied cases

GSD type	Cases	
	No	%
Type I	**2**	**8.0**
Type II	**0**	**0.0**
Type III	**10**	**40.0**
Type IV	**2**	**8.0**
Not tested	**11**	**44.0**

This table demonstrates that the diseased group is diagnosed mainly by liver biopsy. Diagnosis of 56% of cases are confirmed by enzyme analysis and about 8% of this group were GSD I , 40 % GSD III and 8% GSD IV.

Table 3

Comparison between case and control groups as regards anthropometric measurements

	Groups		Total	t- test	P value
	Case (N = 25)	Control (N = 20)			
	X ± SD	X ± SD	X ± SD		
Weight	18.58 ± 8.31	17.6 ± 6.17	18.41 ± 7.97	**0.96***	**>0.05 NS**
Height	94.44 ± 15.20	113.40 ± 9.81	97.60 ±16.08	**4.82**	**<0.001 HS**
BMI	19.86 ± 1.83	17.26 ± 0.97	19.43 ± 1.98	**5.71**	**<0.001 HS**
Head circumference	47.64 ± 3.42	49.60 ±1.53	47.96 ± 3.26	**2.38**	**<0.05 S**
Abd. Circumference	54.44 ±6.11	49.4 ± 4.42	53.6 ± 6.75	**3.09**	**<0.01 HS**
Span	97.24 ±19.09	96.8 ±17.35	97.16 ±18.73	**0.08**	**>0.05 NS**
US/LS	1.12 ± 0.84	1.24 ± 0.13	1.14 ± 0.14	**0.63**	**>0.05 HS**
Span / height	0.98 ± 0.04	0.98 ±0.02	0.98 ±0.04	**0.42**	**>0.05 NS**

***= Mann Whitney U test**

This table shows data of anthropometric measurements of both groups which demonstrated that:

1) The diseased group was significantly shorter in proportionate manner than the control group.

2) They had significantly higher BMI and abdominal circumferences than the control group.

3) Also there was significant decrease in head circumferences of this group than the control group.

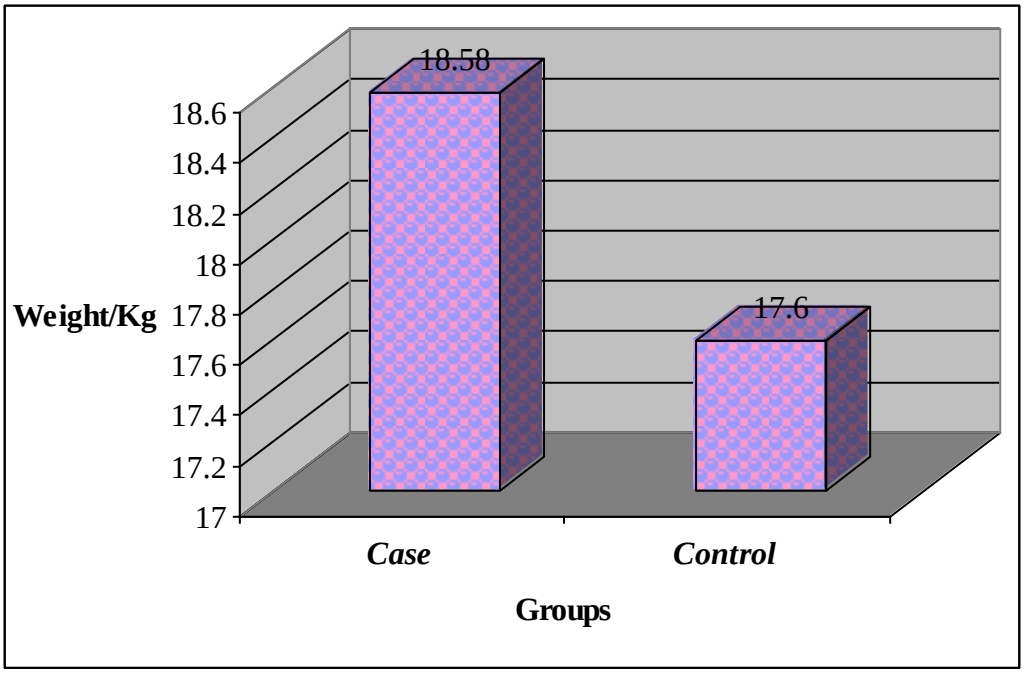

Fig (8) : Comparison between case and control groups as regards body weight.

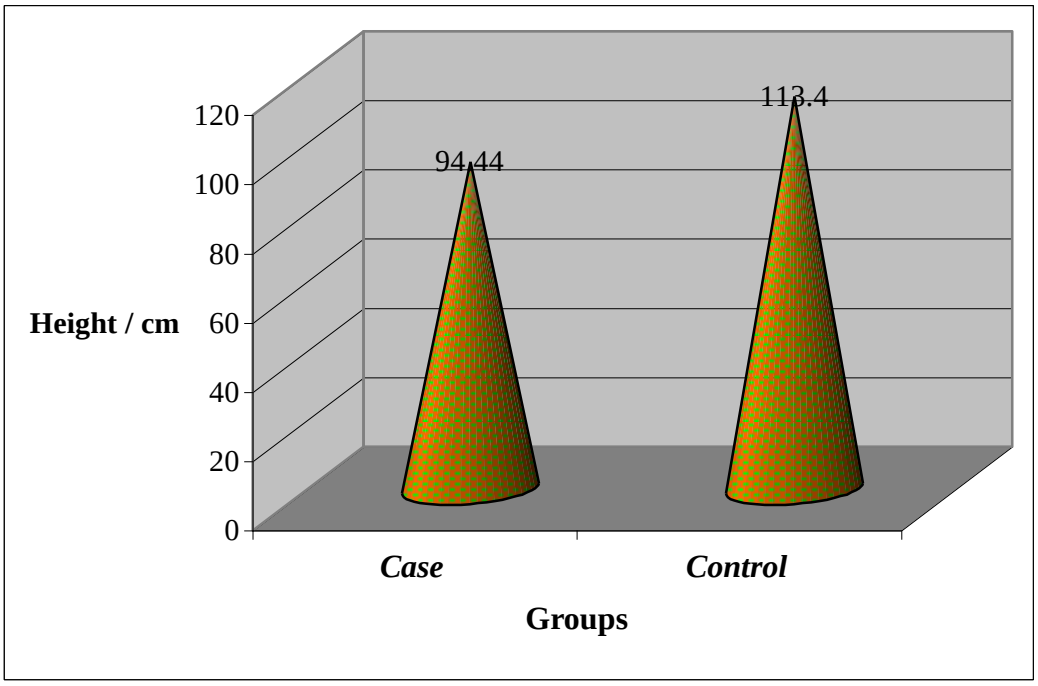

Fig (9): Comparison between case and control groups as regards body height.

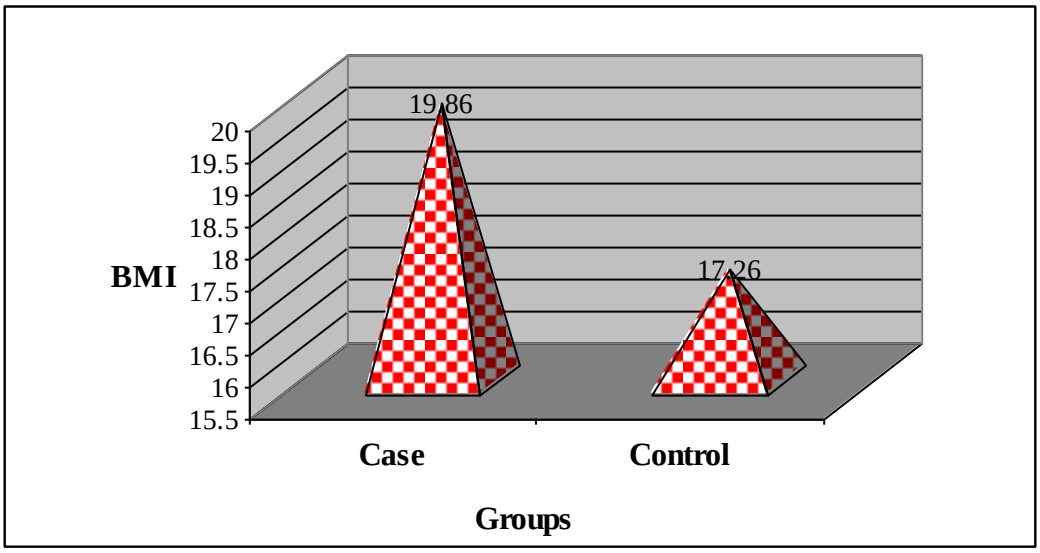

Fig (10): Comparison between case and control groups as regards body mass index.

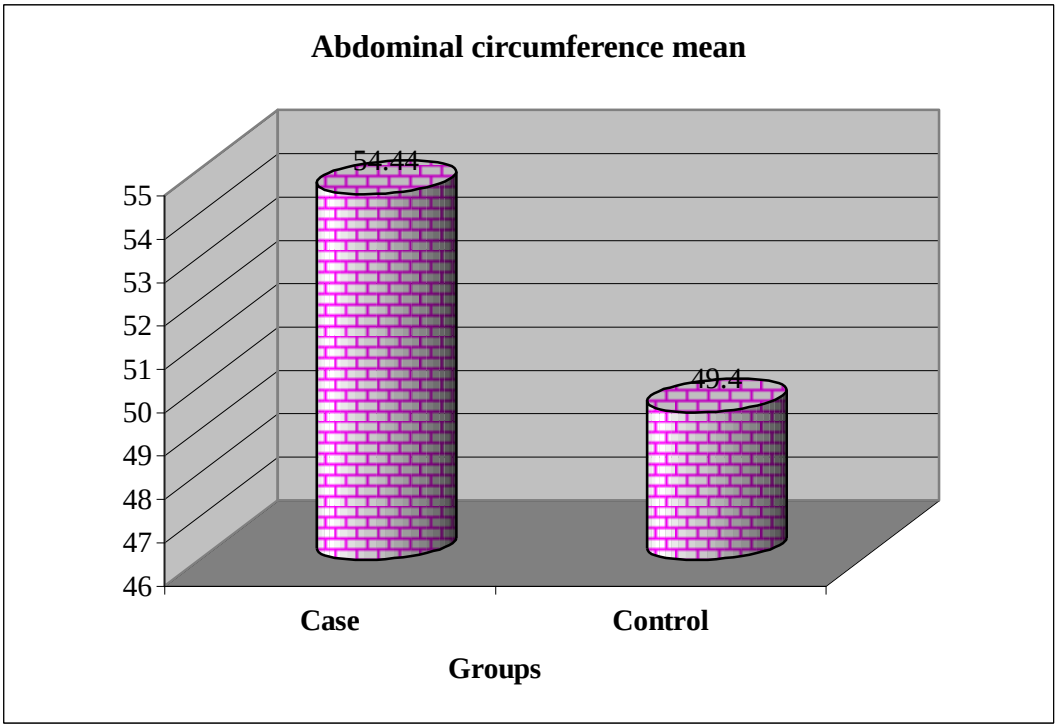

Fig (11): Comparison between case and control groups as regards mean abdominal circumference.

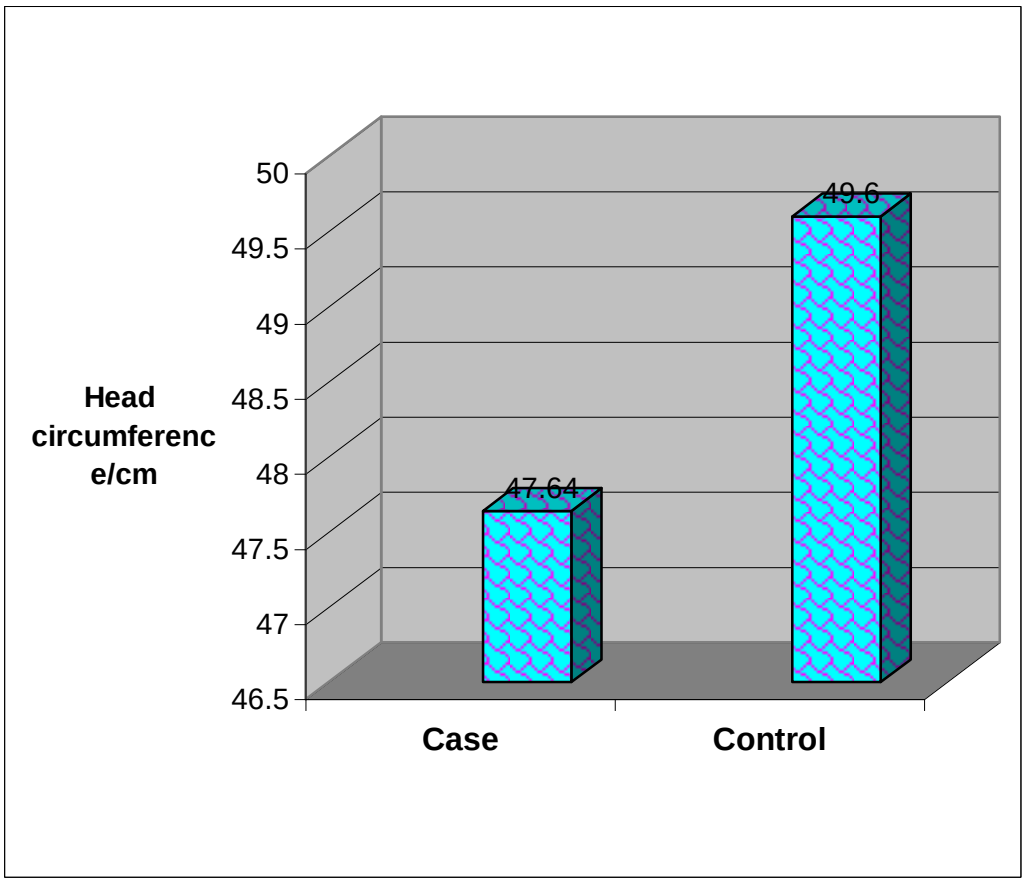

Fig (12): Comparison between case and control groups as regards head circumference.

Table 4

Comparison between case and control groups as regards clinical parameters

	Groups				Total		Test of significance	P value
	Case (N = 25)		Control (N = 20)					
	X ± SD		X ± SD		X ± SD			
Liver span	13.76 ± 2.35		5.7 ± 0.76		12.41 ± 3.74		**t- test 16.1**	**<0.001 HS**
	No	**%**	**No**	**%**	**No**	**%**		
Splenomegaly							**Fisher's Exact test 9.0**	**<0.01 HS**
○ present	9	36.0	0	0.0	9	20.0		
○ absent	16	64.0	20	100	36	80.0		

This table shows data of clinical examination in which there was:

1) Significant increase in size of the liver size in diseased group in comparison to the control group.

2) Significant increase in size of the spleen in diseased group in comparison to the control group.

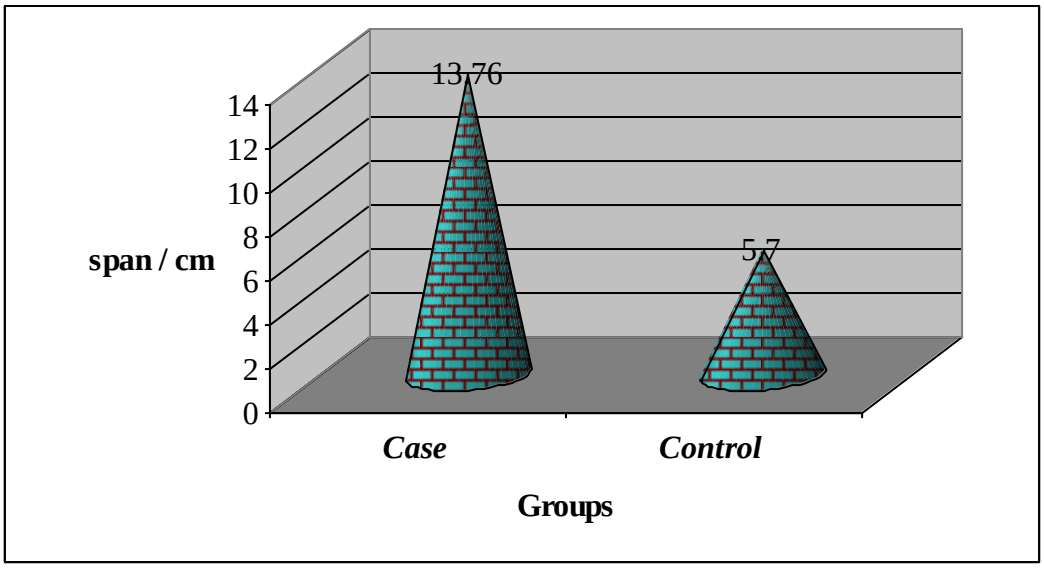

Fig (13): Comparison between case and control groups as regards the mean of liver span.

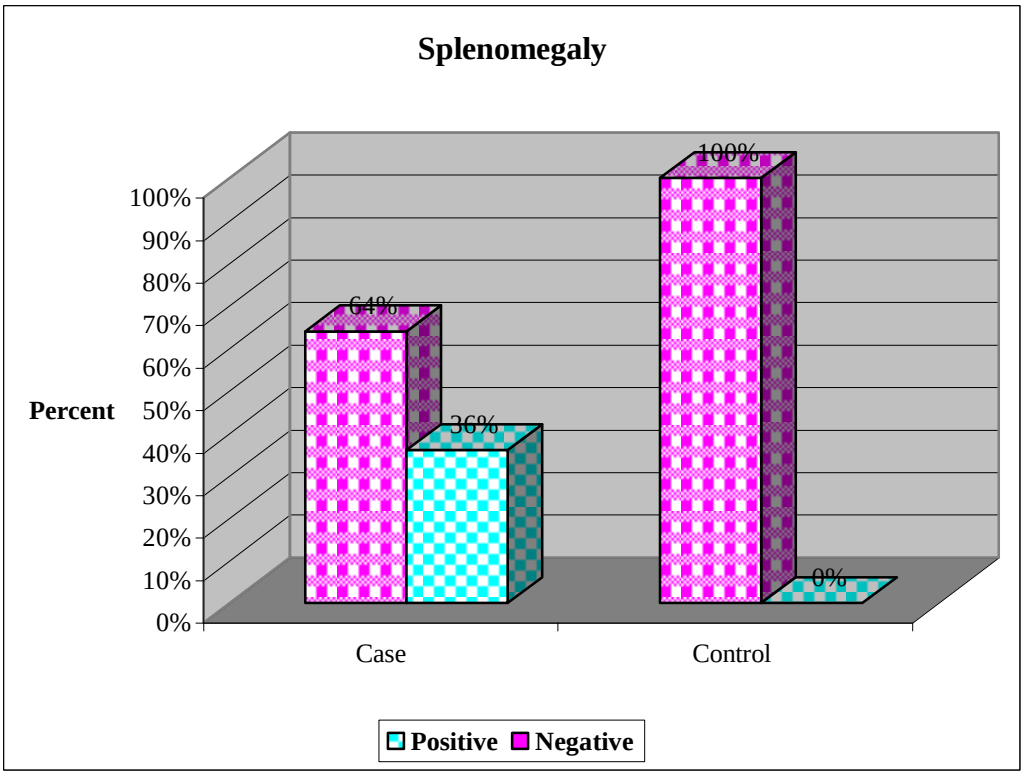

Fig (14): Comparison between case and control groups as regards the presence of splenomegaly.

Table 5

Comparison between case and control groups as regards laboratory measurements

	Groups				Total		Mann Whitney U test	P value
	Case (N = 25)		Control (N = 20)					
	No	%	No	%	No	%	Fisher's Exact test	
Liver enzymes								
o Normal	7	28.0	20	100	27	60.0	**24.0**	**<0.001 HS**
o Elevated	18	72.0	0	0.0	18	40.0		
Hyperlipidemia								
o Present	18	72.0	0	0.0	18	40.0	**24.0**	**<0.001 HS**
o Absent	7	28.0	20	100	27	00.0		
Anemia							χ^2	
o Anemic	17	68.0	8	40.0	25	55.6		
o Non anemic	8	32.0	12	60.0	20	44.4	**3.53**	**>0.05 NS**
Type of anemia							**Fisher's Exact test**	
o Microcytic	15	60.0	8	40.0	23	51.1	**1.2**	**>0.05 NS**
o Normocytic	2	8.0	0	0.0	2	4.5		

This table shows laboratory measurements demonstrating significant increase in liver enzymes assay and lipid profile in diseased group.

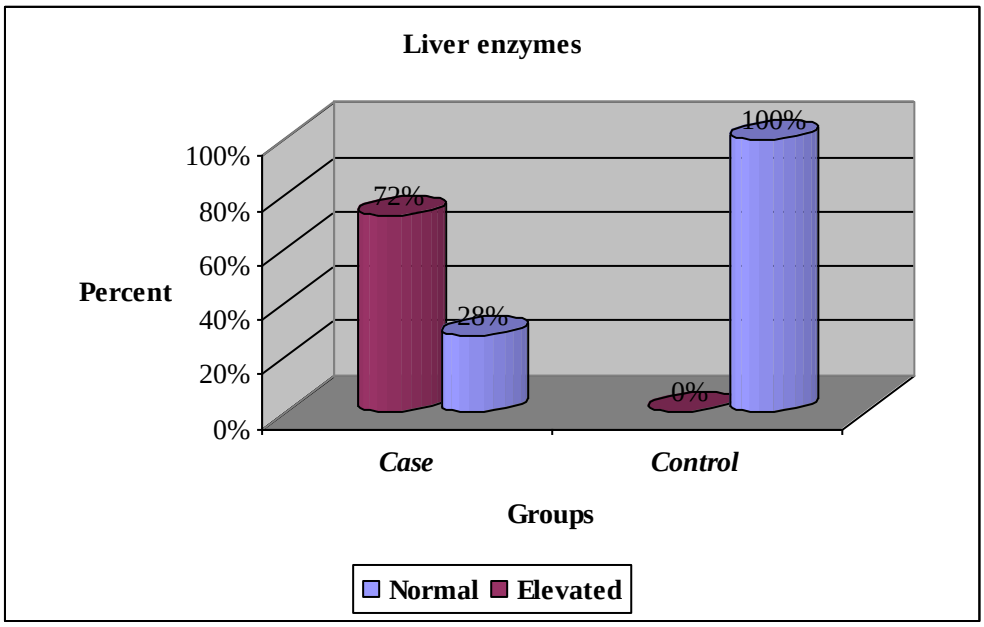

Fig (15): Comparison between case and control groups as regards percent of elevated liver enzymes.

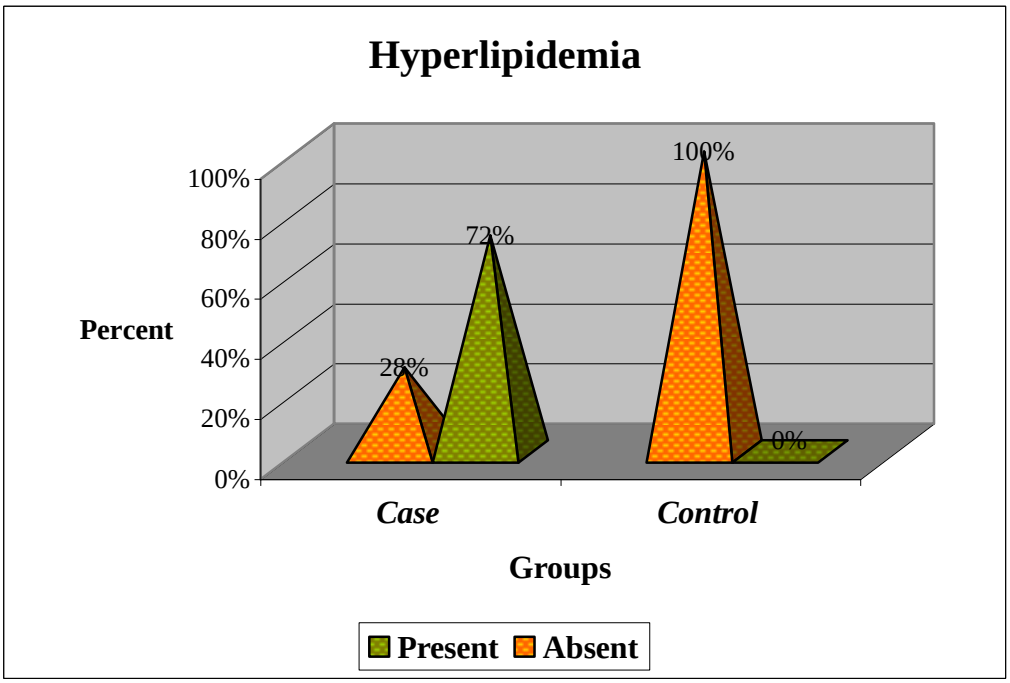

Fig (16): Comparison between case and control groups as regards percent of presence or absence of hyperlipidaemia.

Table 6

Comparison between case and control groups as regards GH & IGF1

	Groups		Total	Mann Whitney U test	P value
	Case (N = 25)	Control (N = 20)			
	X ± SD	X ± SD	X ± SD		
Growth hormone(ng/ml)	10.8 ± 6.63	1.88 ± 0.60	9.31 ± 6.92	**5.72**	**<0.001 HS**
IGF1(ng/ml)	4.08 ± 4.96	104.0 ± 40.31	20.73 ± 41.48	**5.77**	**<0.001 HS**

This table shows laboratory measurements of the subjects and differences between cases and control .There was significant increase in the level of growth hormone and marked decrease in the level of IGF1in diseased group.

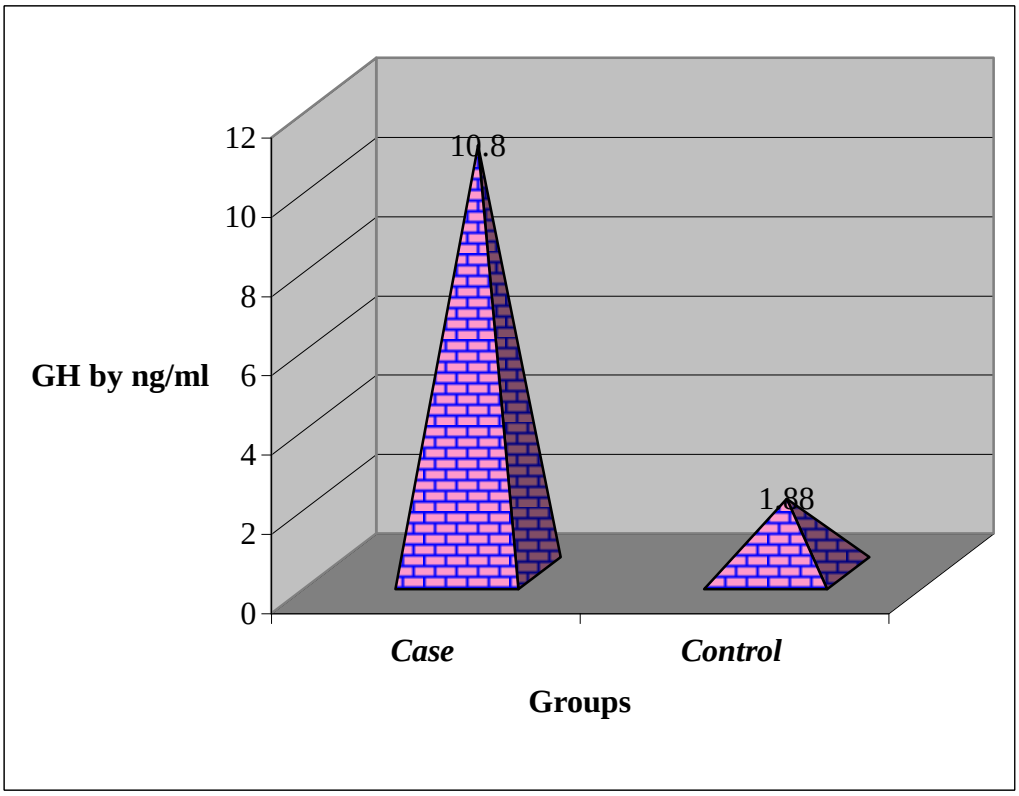

Fig (17): Comparison between case and control groups as regards mean value of GH (ng /ml).

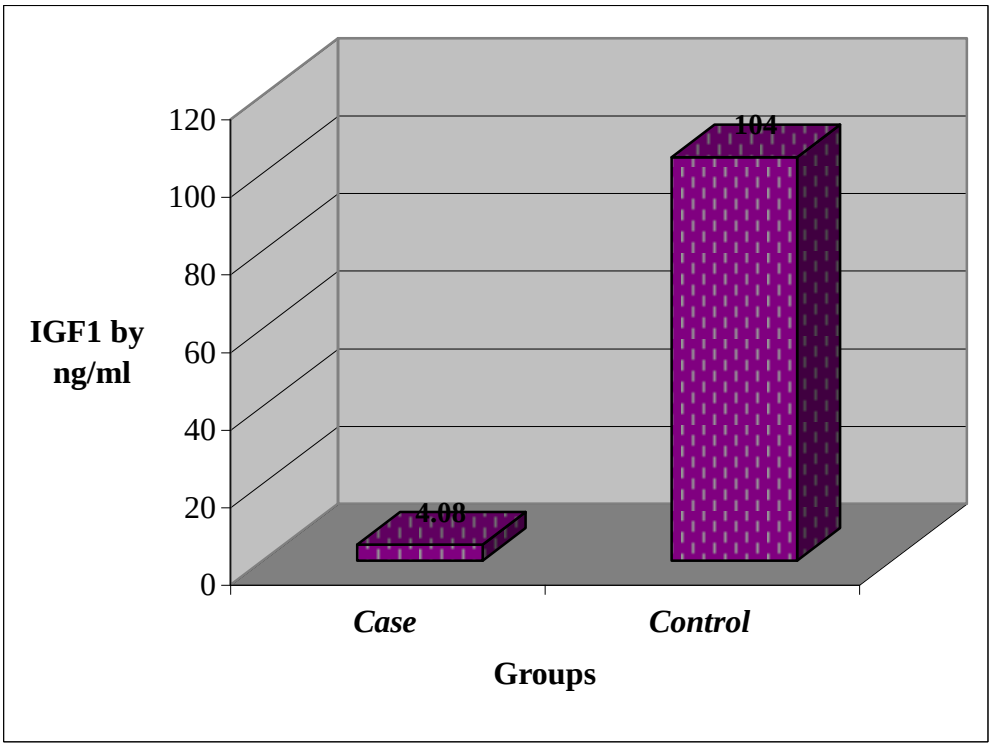

Fig (18): Comparison between case and control groups as regards mean value of IGF1

Table 7

Pearson correlation between height and both growth hormone and IGF1

	Height	
	Correlation coefficient (r)	**P value**
GH	**- 0.41**	**<0.01 S**
IGF1	**+ 0.69**	**<0.001 HS**

This table demonstrates that serum GH concentration was significantly negatively correlated with height SDS**,** while Serum IGF1 concentration was significantly positively correlated with height SDS in diseased group.

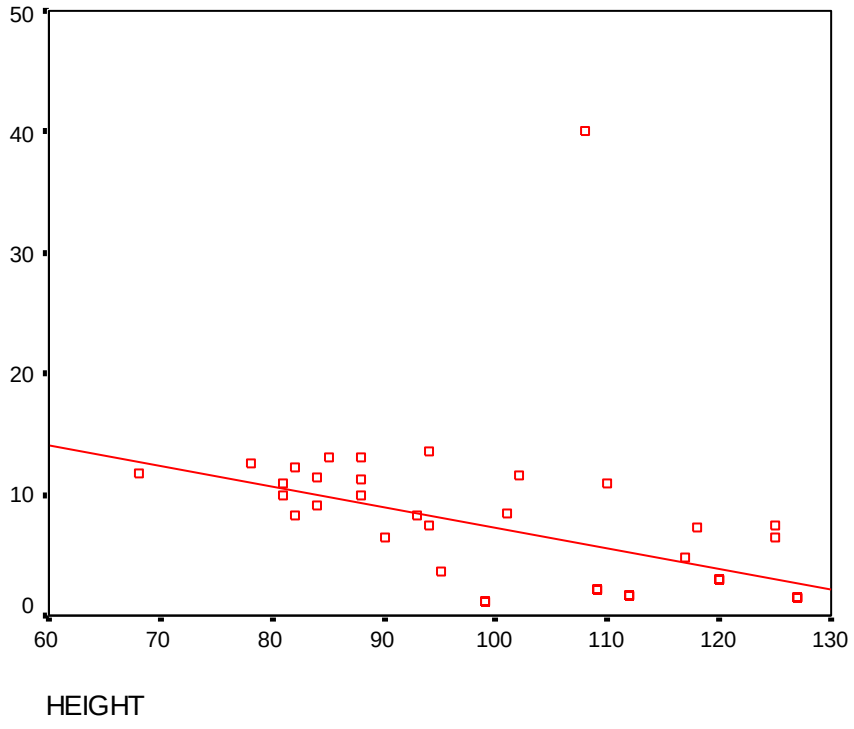

Fig (19): This figure shows the negative and significant correlation between the serum level of GH and height.

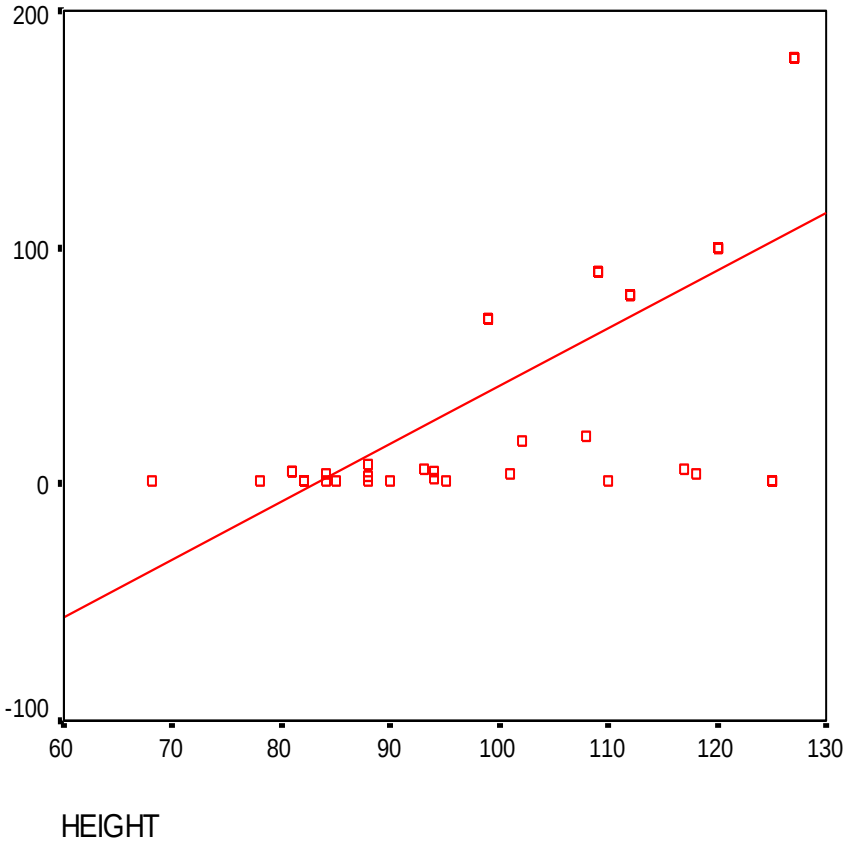

Fig (20): This figure shows the positive and significant correlation between the serum level of IGF1 and height.

Table 8

Pearson correlation between BMI and both growth hormone and IGF1

	BMI	
	Correlation coefficient (r)	**P value**
GH	**+ 0.43**	**<0.01 HS**
IGF1	**- 0.55**	**<0.001 HS**

This table shows that BMI in diseased group in our study had:

1. Significant positive correlation with GH hormone**.**
2. Significant negative correlation with IGF1**.**

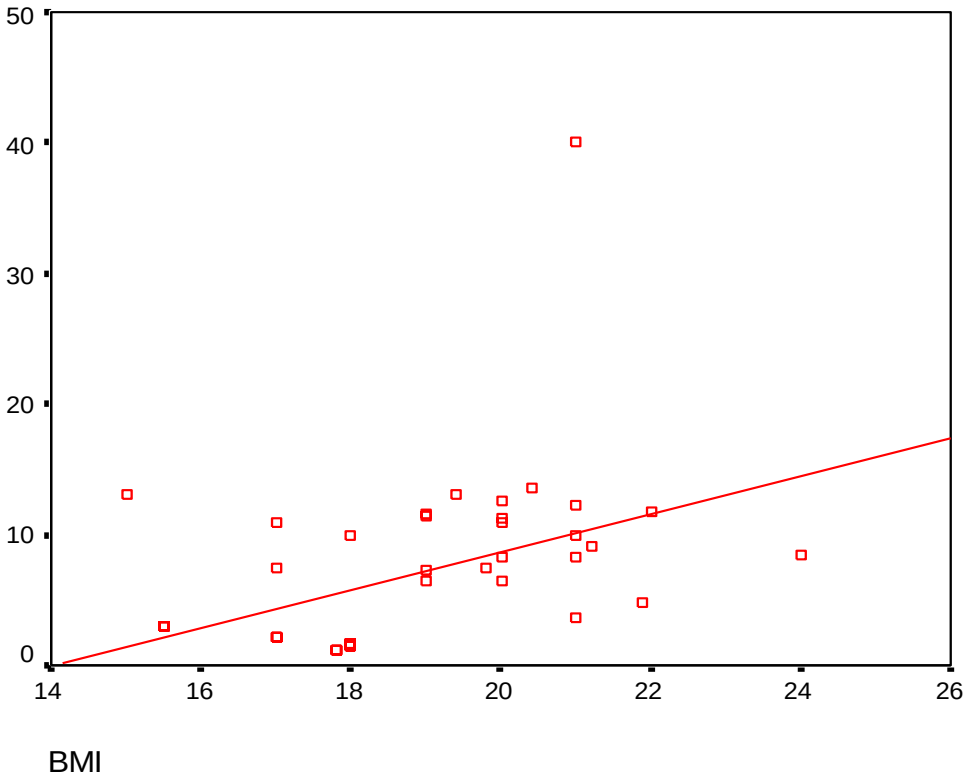

Fig (21): This figure shows the positive and significant correlation between the serum level of GH and BMI.

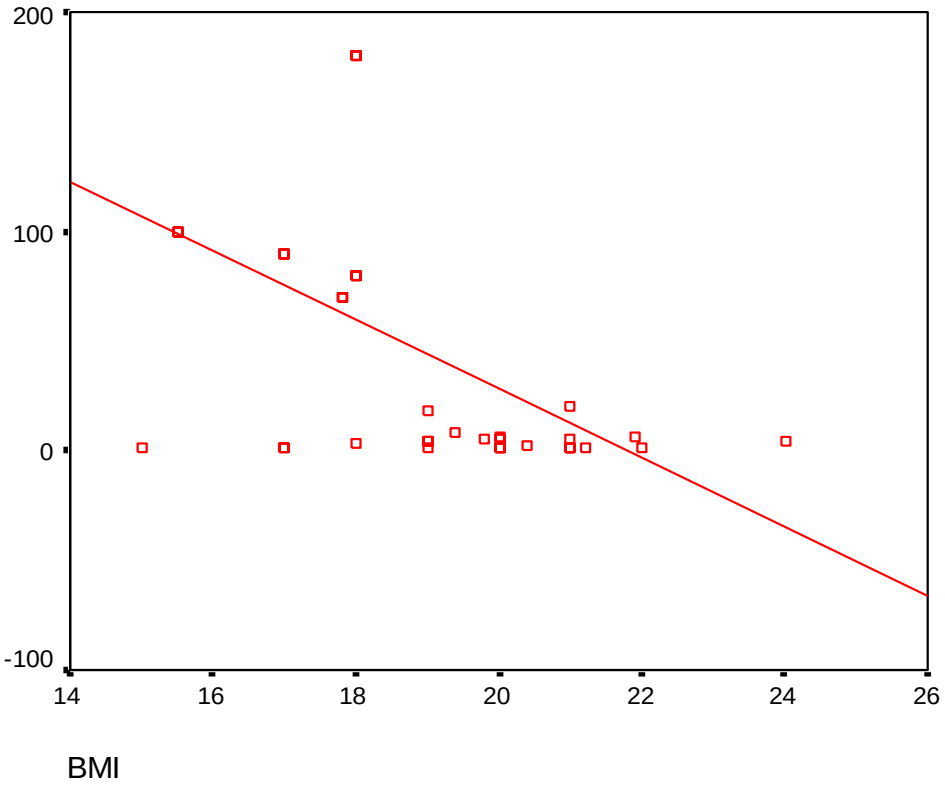

Fig (22): This figure shows the negative and significant correlation between the serum level of IGF1 and BMI.