RESULTS

Table (1): Comparison of general data between cases and controls:

Variables	Cases Mean±SD (n=30)	Controls Mean ±SD (n=10)	T	P
Weight (Kg)	3.77± 5.8	3.35± 5.2	2.8	>0.05
Gestational age (weeks)	38.6±1.3	38.9±1.1	0.7	>0.05

p>0.05: nonsignificant, **p<0.01: highly significant.

This table shows a non significant difference was detected between cases and controls as regarding to the weight and gestational age.

Table (2): comparison between cases & control groups as regards to sex:

	Female		Male		Total	X^2	P
	No.	%	No.	%			
Cases	10	33.3	20	66.7	30	0.8	>0.05
Control	5	50	5	50	10		

This table shows a non significant difference was detected between cases and controls as regarding to sex.

Table (3): Comparison between cases and controls as regards mode of delivery:

	CS		NVD		X2	P
	No.	%	No.	%		
Cases	25	83, 3	5	17, 7		
Control	4	40	6	60	7, 06	<0.01**

.01: highly significant

Using Chi-square test, there was a highly significant difference in the mode of delivery between cases and controls.

Figure (1): Comparison between cases and controls as regards mode of delivery:

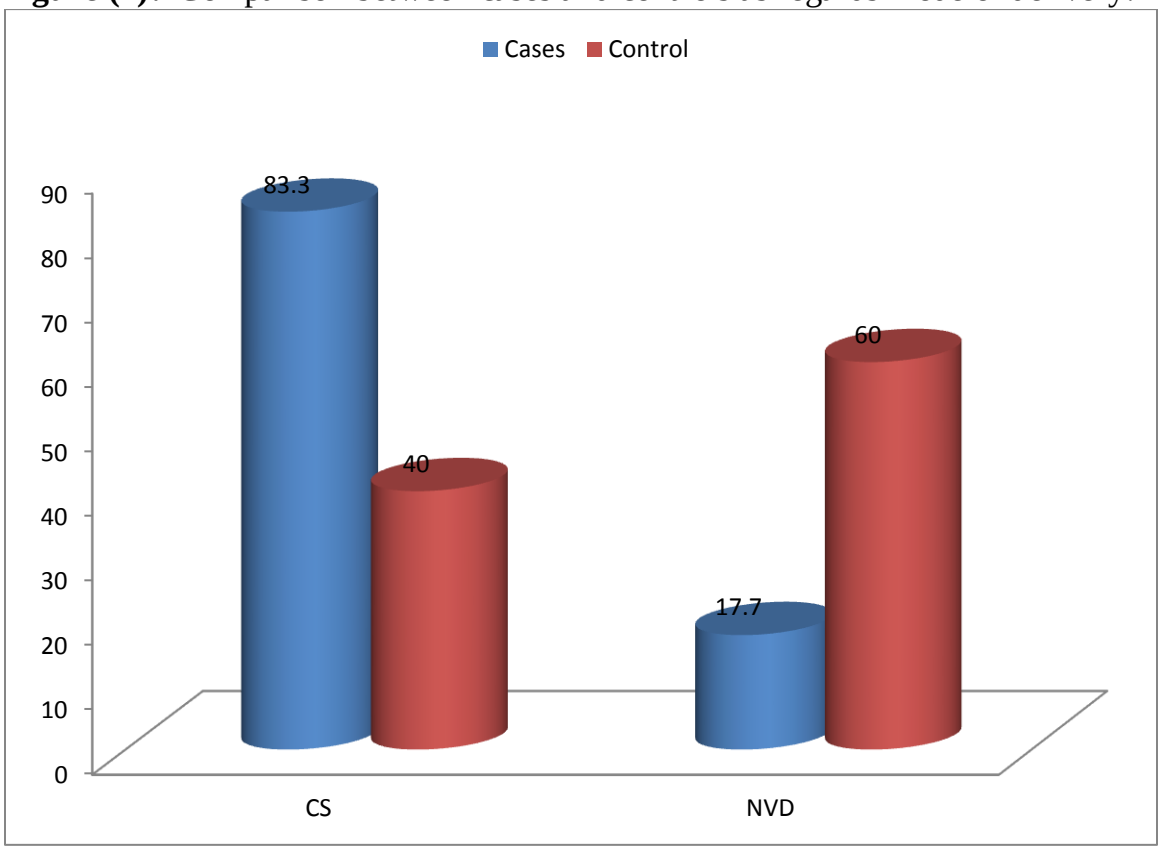


Table (4): Comparison between cases and controls as regards Apgar score at 5 minutes:

Variables	Cases Mean±S	Controls	t	P

	D (n=٣٠)	Mean ±SD (n=10)		
Apgar score	4.6±1.3	8.5±2.3	**2.9**	**<0.01****

p>0.05: non significant, **p<0.01: highly significant.

Using unpaired t-test, a highly significant difference was detected between cases and controls regarding the Apgar score.

Figure (2): Comparison between cases and controls as regards Apgar score:

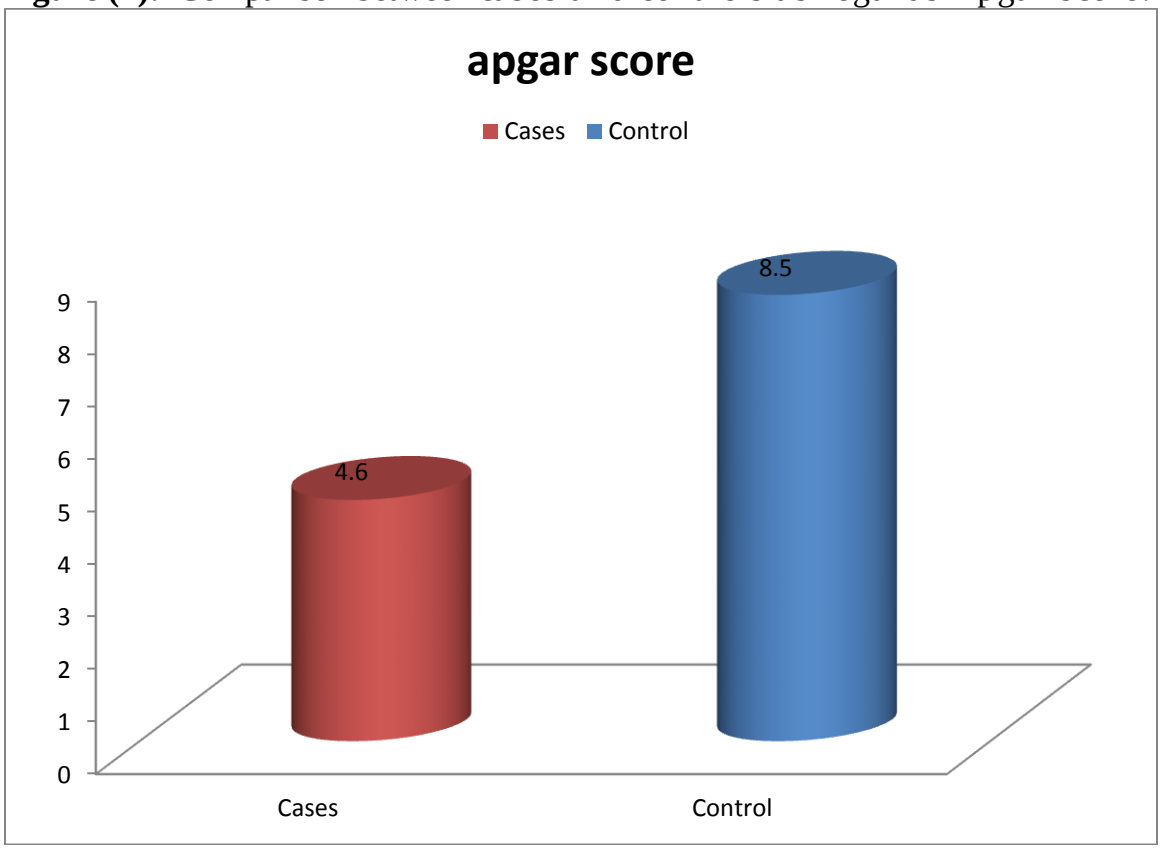


Table (5): Frequency of ALT and AST elevation among asphyxiated newborns:

	Number	Percentage (%)
ALT	21	70%

AST	25	83%

ALT: Alanine aminotransferrase, AST: Aspartate aminotransferase.

Among our asphyxiated newborns, 70% had elevation in serum ALT levels and 83% had elevation in serum AST level.

Table (6): Frequency of liver enzymes elevation compatable with pattern of hypoxic hepatitis:

	Number	Percentage (%)
ALT	18	60%
AST	17	56.7%

ALT: Alanine aminotransferrase, AST: Aspartate aminotransferase.

Among our asphyxiated newborns, 60% followed temporal enzymatic pattern for ALT and 56.7% followed temporal enzymatic pattern for AST.

Table (7): Changes in serum ALT among the studied cases according to their age:

ALT	*Mean*	±SD	% of change	t	P

1st day	91.6	31			
3rd day	146	75	60.4%	6.5	<0.01**
7th day	69.8	20	-23%	6.9	<0.01**

** *p<0.01: Highly significant*, ALT: Alanine aminotransferase.

Using paired t-test, the highest increase in ALT in relation to baseline was observed at 3rd day which then decreased below the baseline level at 7th day.

Figure (3): Changes in serum ALT among the studied cases

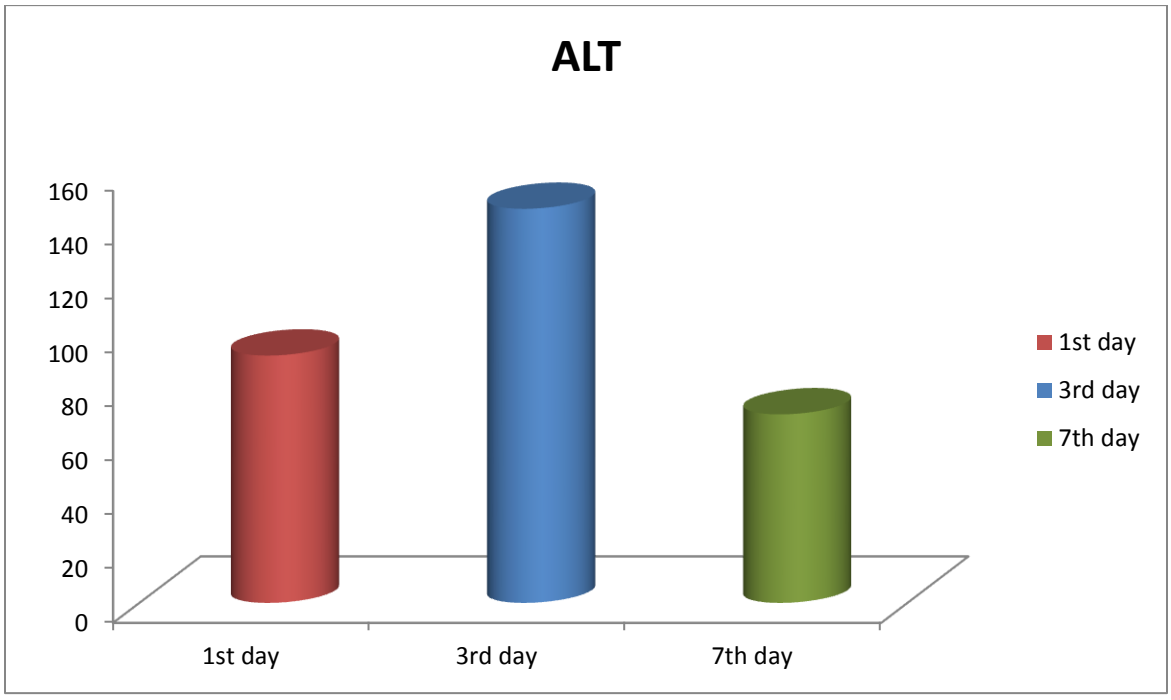


Table (8): Changes in serum AST among the studied cases according to their age:

AST	Mean	±SD	% of change	t	P

1st day	105	25			
3rd day	160	81	52.3%	5	<0.01**
7th day	69.8	20	-34%	11	<0.01**

** *p<0.01: Highly significant*, AST: Aspartate aminotransferase.

Using paired t-test, the highest increase in AST in relation to baseline was observed at 3rd day which then decreased below the baseline level at 7th day.

Figure (4): Changes in serum AST among the studied cases

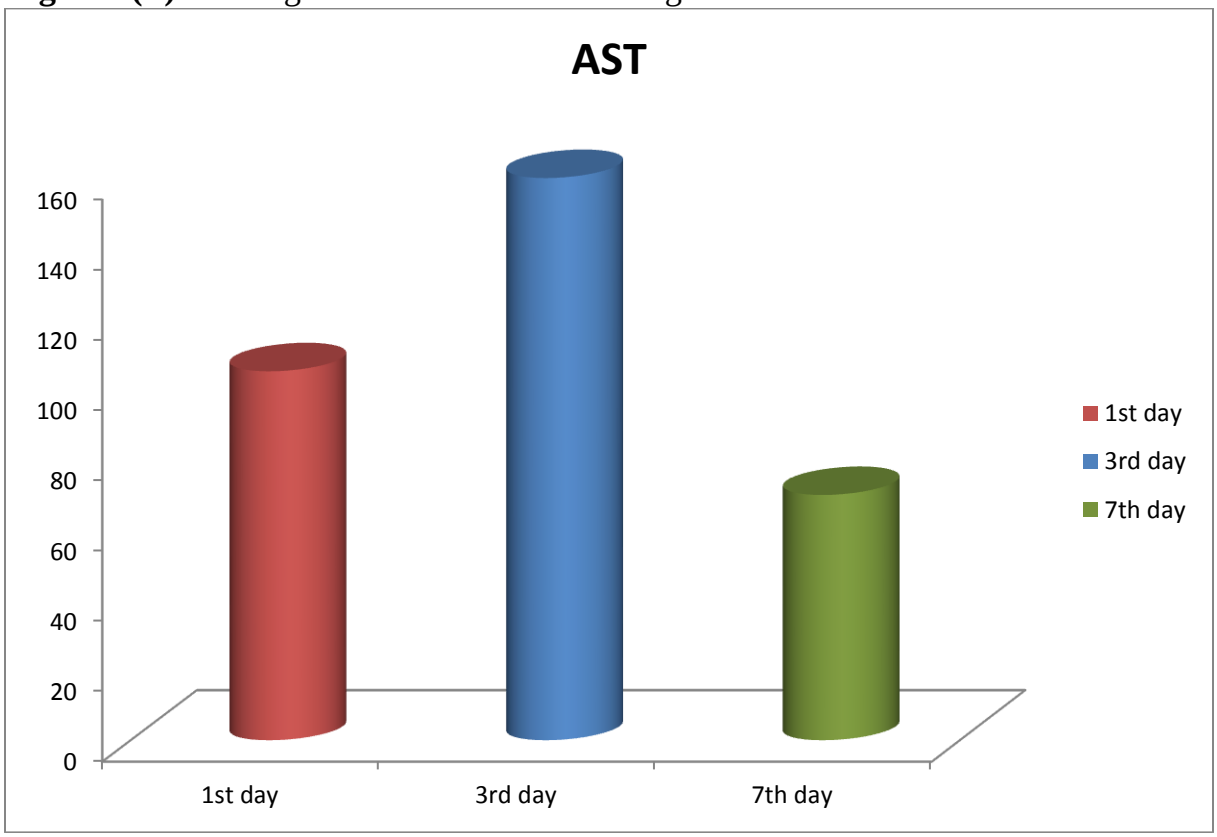


Table (9): Changes in serum LDH among the studied cases according to their age:

LDH	Mean	±SD	% of change	t	P

1st day	889.3	167			
3rd day	1862	974	109%	**6.2**	**<0.01****
7th day	777	237	-12.5%	**2.4**	**<0.05***

** *p<0.01: highly significant, * p<0.05: significant, LDH: Lactate dehydrogenase.*

Using paired t-test, the highest increase in LDH in relation to baseline was observed at 3rd day which then decreased below the baseline level at 7th day.

Figure (5): Changes in serum LDH among the studied cases

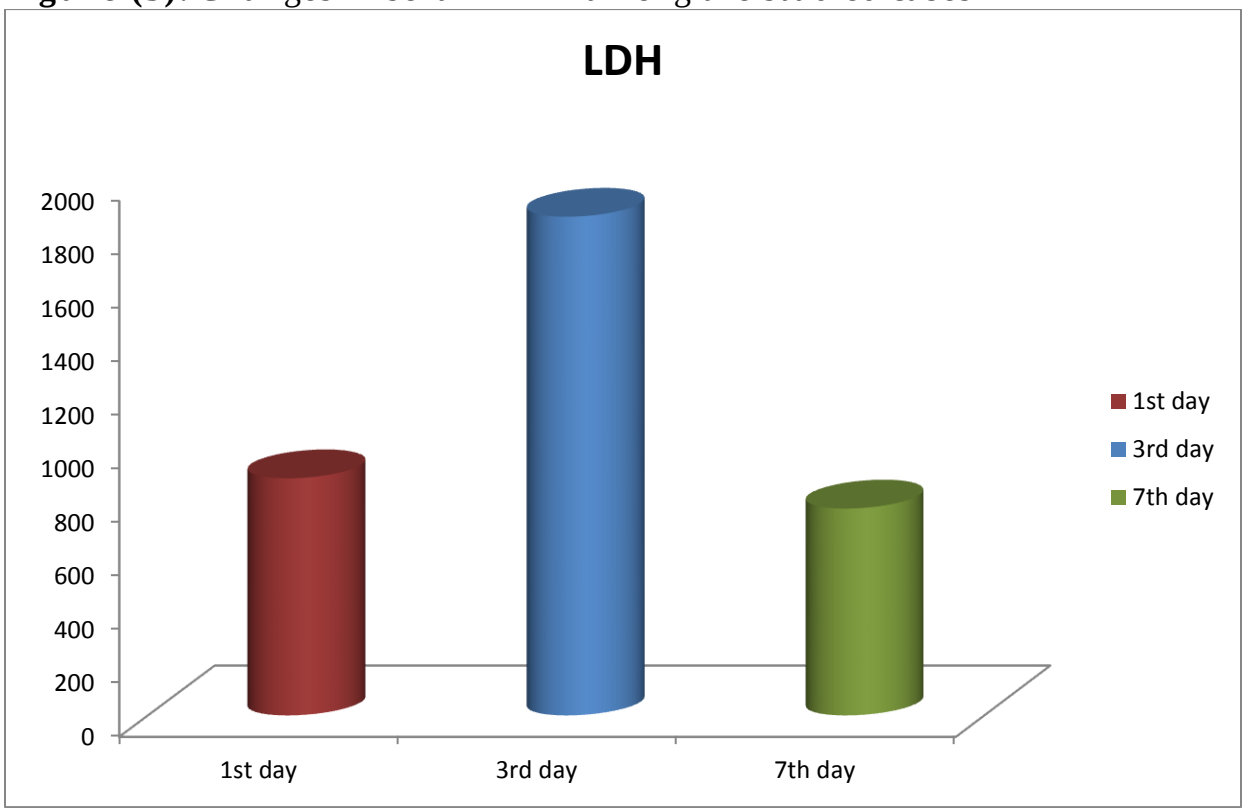


Table (10): Changes in serum GGT among the studied cases according to their age:

GGT	Mean	±SD	% of chang	t	P

			e		
1st day	9.4	2.1			
3rd day	10	1.8	1.8%	1.9	>0.05
7th day	9.9	1.6	1.3%	1.7	>0.05

** p <0.05: Significant test, GGT: Gama glutamyl transferrase, p >0.05 non significant.*

Using paired t-test, a non significant increase in GGT was observed at 3rd and 7th day.

Figure (6): Changes in serum GGT among the studied cases

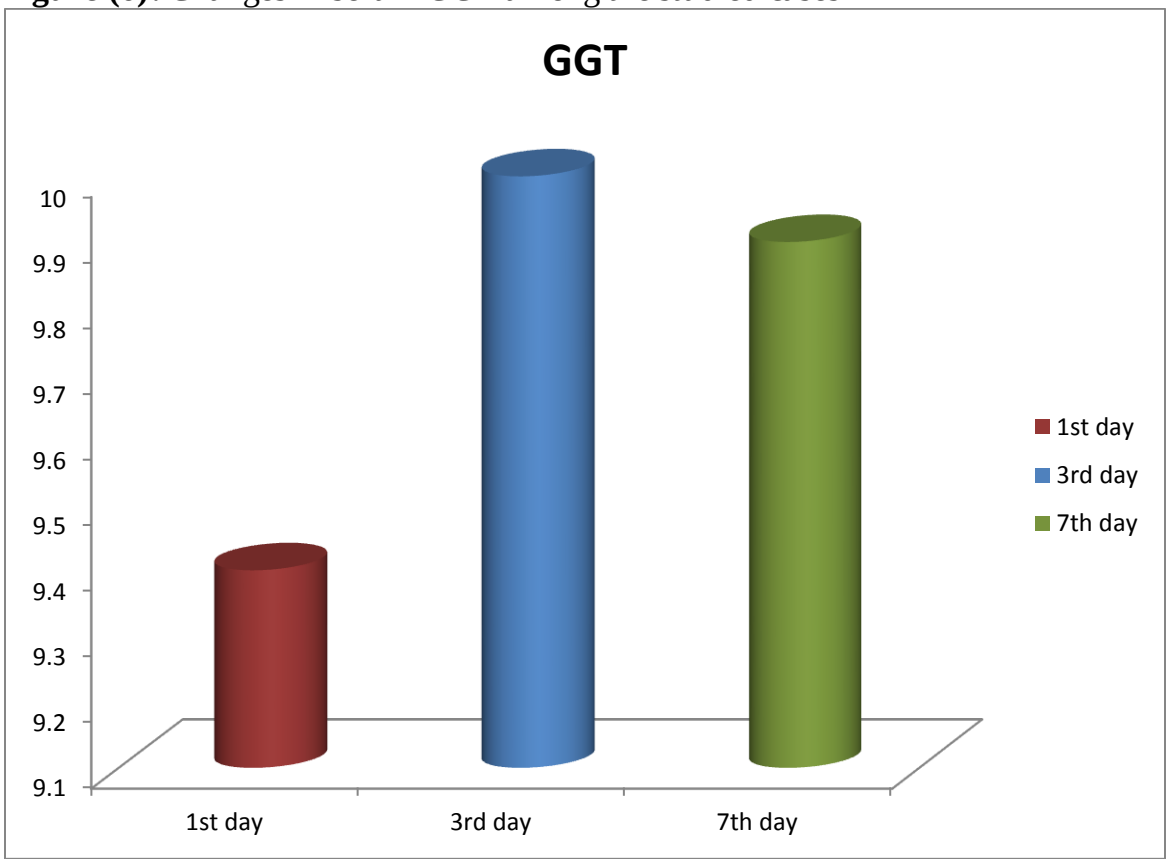


Table (11): Changes in serum albumin among the studied cases according to their age:

Albumin	Mean	±SD	% of chang	t	P

			e		
1st day	3.21	0.3			
3rd day	3	0.3	6%	1.9	>0.05
7th day	3	0.2	6%	1.9	>0.05

Using paired t-test, there was a non significant change in serum albumin level after follow up period in comparison to the baseline level.

Figure (7): Changes in serum albumin among the studied cases

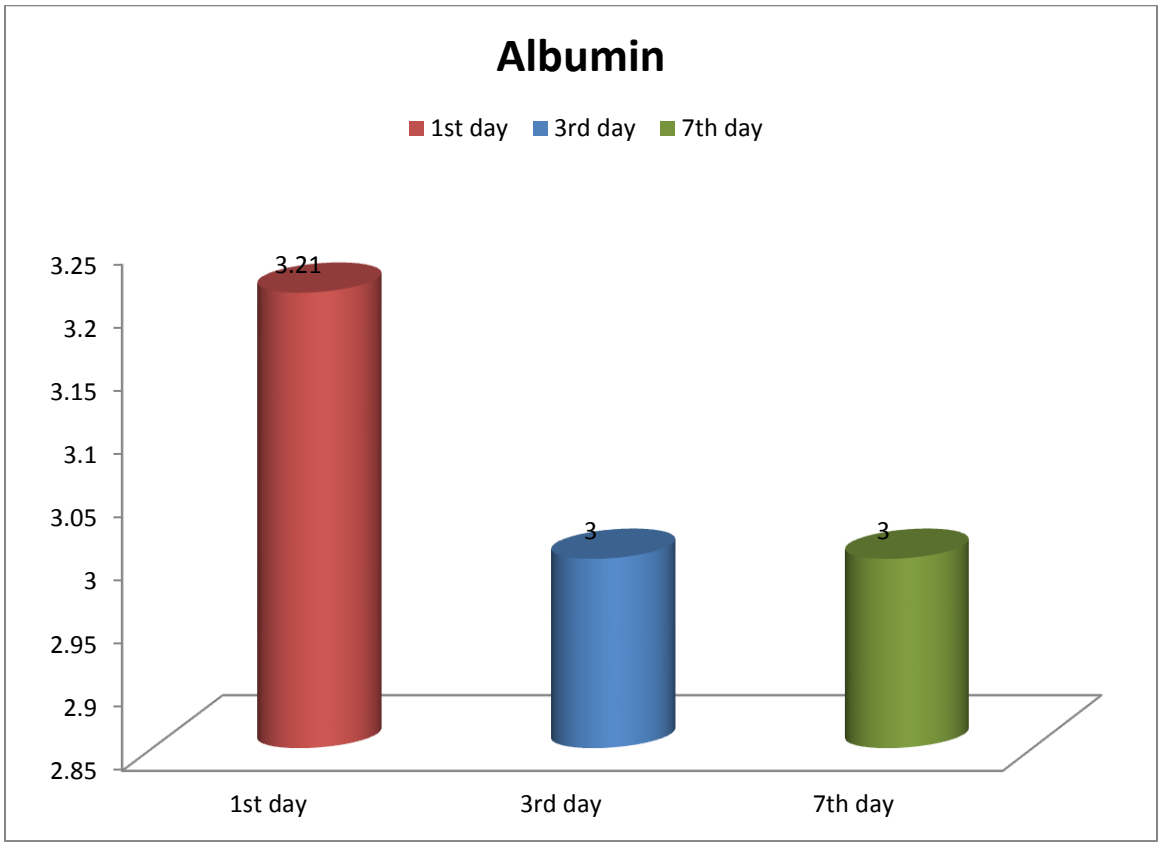


Table (12): Changes in serum total bilirubin among the studied cases according to their age:

Total bilirubin	*Mean*	±SD	% of change	t	P
1st day	3.7	0.9			
3rd day	5.2	2.5	40.5%	4	<0.01**
7th day	3.5	1.4	-5%	0.9	>0.05

*** p<0.01: Highly significant, * p<0.05: Significant test, p>0.05: non significant.*

Using paired t-test, there was a highly significant increase in total bilirubin at 3rd day in comparison to baseline level.

Figure (8): Changes in serum total bilirubin among the studied cases

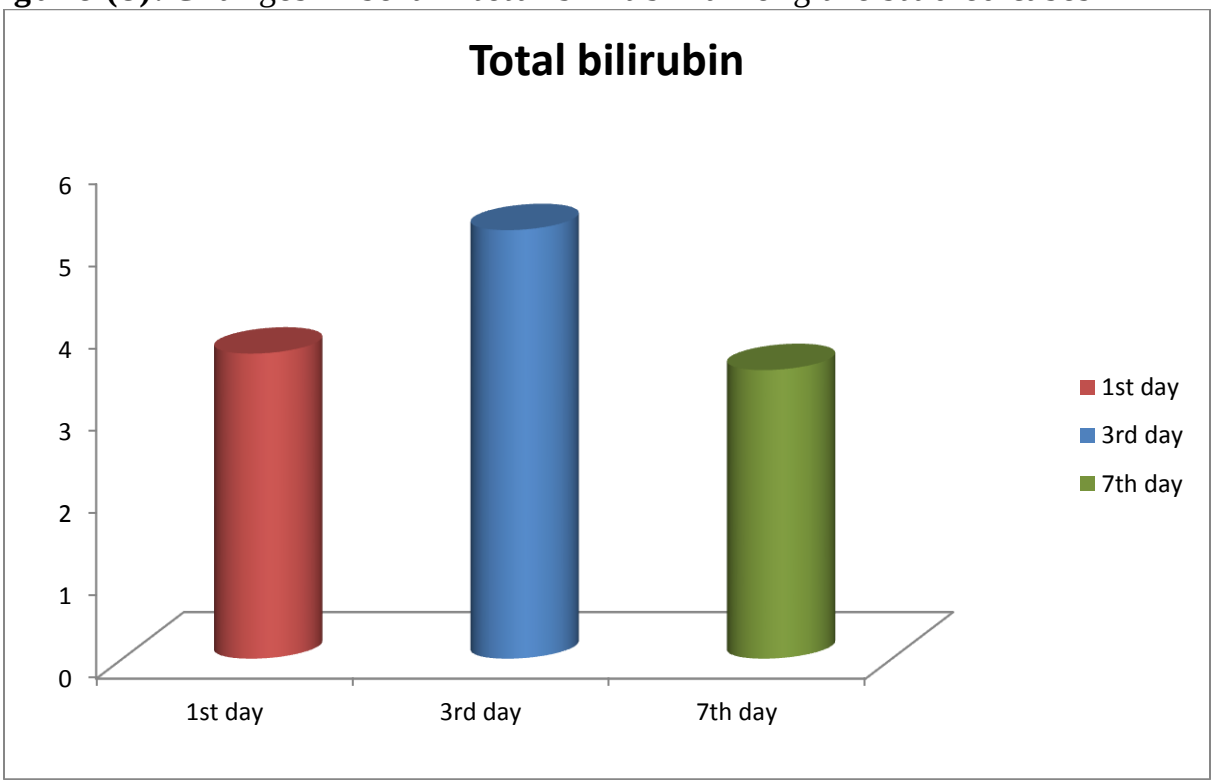


Table (13): Changes in serum direct bilirubin among the studied cases according to their age

Direct bilirubin	*Mean*	±SD	% of change	t	P
1st day	0.57	0.2			
3rd day	0.86	0.5	53%	3.9	<0.01**
7th day	0.57	0.2	0	0.09	>0.05

*** p<0.01: Highly significant, * p<0.05: Significant test, p>0.05: non significant.*

Using paired t-test, there was a highly significant increase in direct bilirubin at 3rd day in comparison to baseline level.

Figure (9): Changes in serum direct bilirubin among the studied cases.

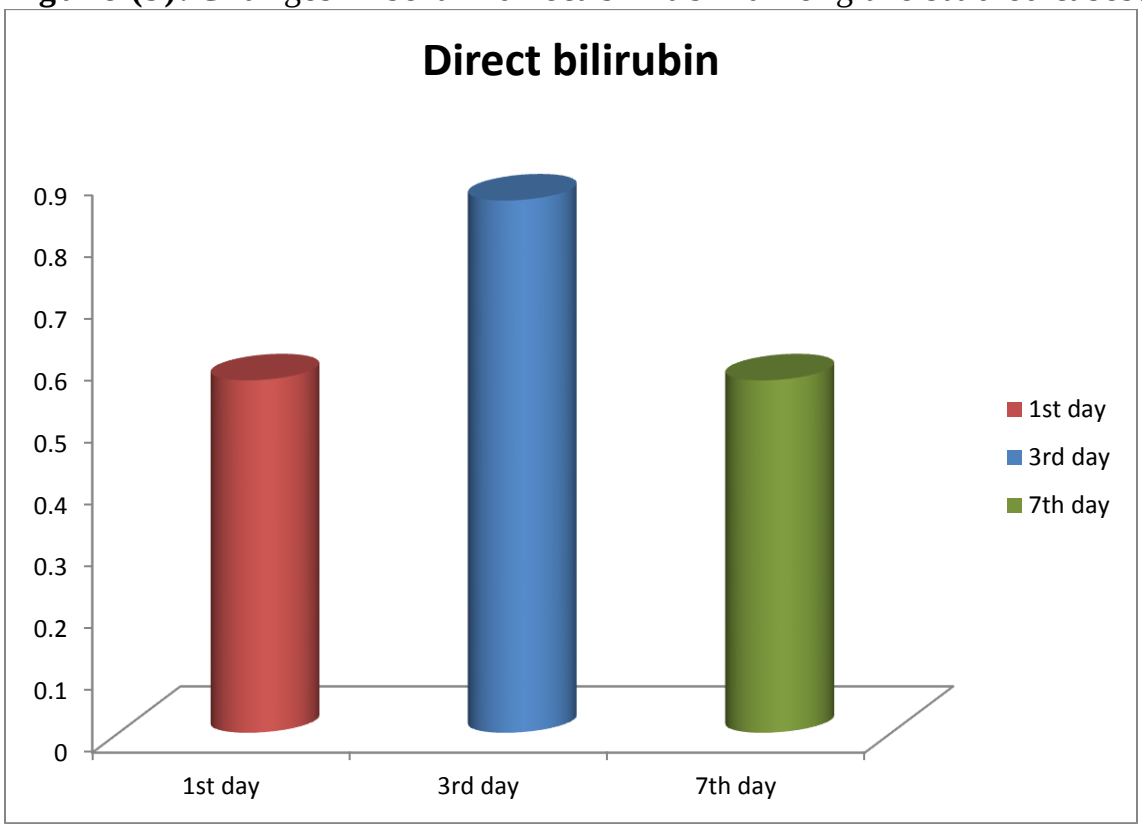


Table (14): Changes in INR among the studied cases according to their age:

INR	Mean	±SD	% of change	t	P
1st day	1.37	0.1			
3rd day	1.2	0.09	1.4%	2.8	<0.05*
7th day	1	0.1	2.9%	3	<0.01**

*** p<0.01: Highly significant, * p<0.05: Significant, p>0.05: non-significant, INR: International normalization ratio.*

There was a significant and a highly significant decrease in INR at 3rd and 7th day respectively in comparison to the baseline level.

Figure (10): Changes in INR among the studied cases

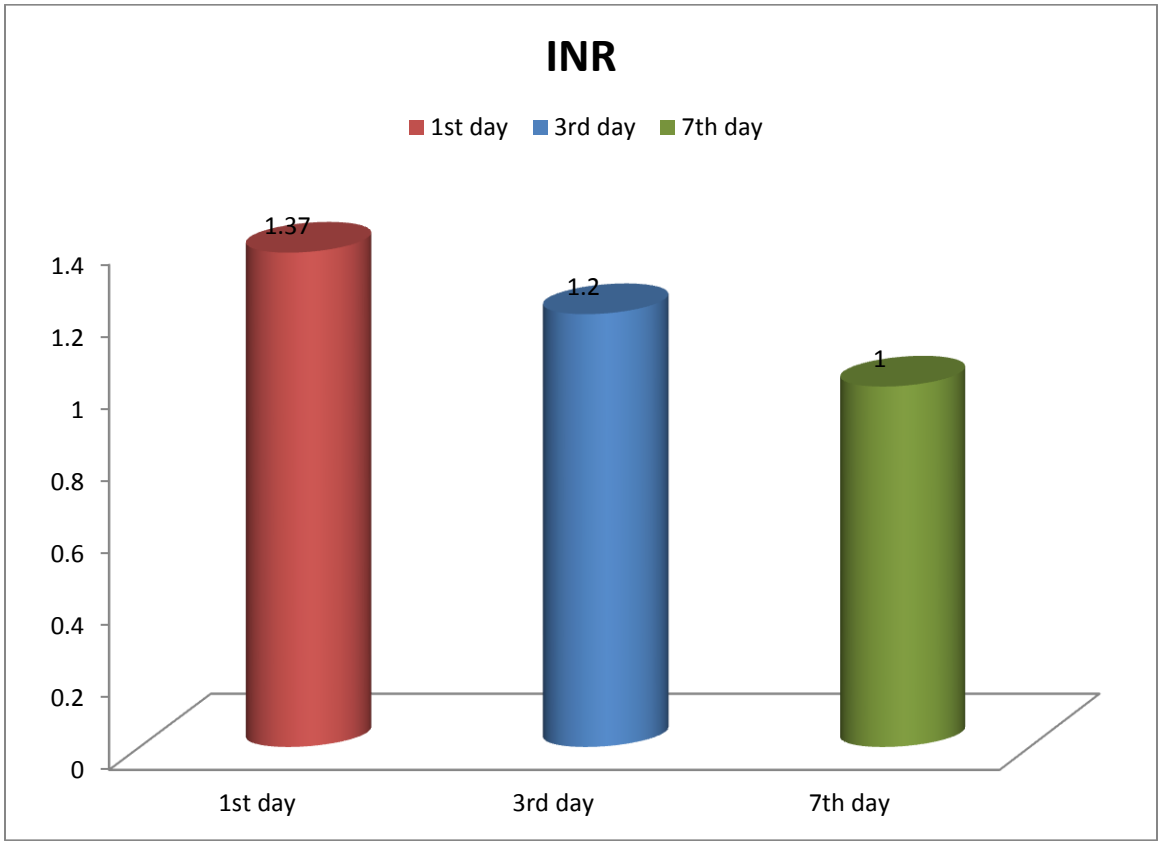


Table (15): Correlation between different enzymes in 1st day versus Apgar score among the studied cases

Variables	R	P
ALT	-0.87	<0.01**
AST	-0.86	<0.01**
LDH	0.12	>0.05
GGT	0.13	>0.05

*** p <0.01: Highly significant, p >0.05: non significant, ALT: Alanine aminotransferase, AST: Aspartate aminotransferase, LDH: Lactate dehydrogenase, GGT: Gama glutamyl transferrase, GA: Gestational Age.*

Using correlation coefficient test (r-test), there was a highly significant negative correlation between each of ALT and AST versus Apgar score.

Figure (11): Correlation between ALT versus Apgar score.

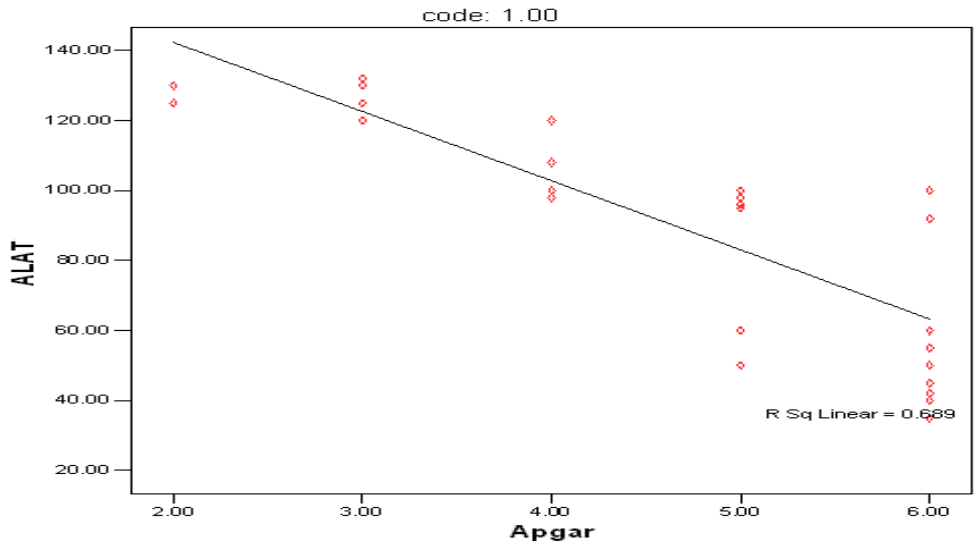


Figure (12): Correlation between AST versus Apgar score.

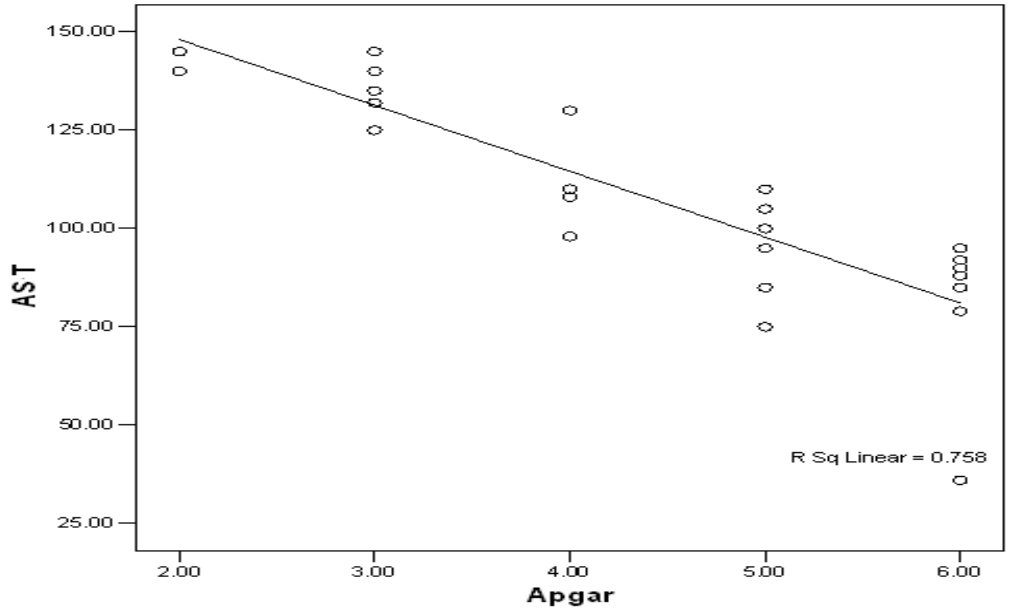


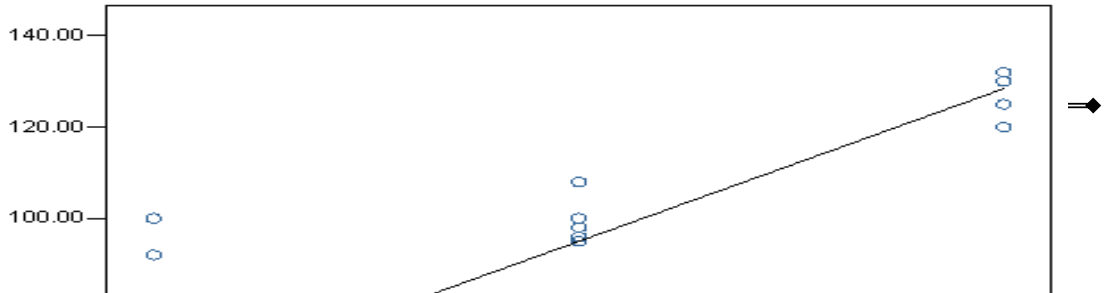
Table (16): Correlation between different enzymes versus HIE stage among the studied cases

Variables	R	P
ALT	0.89	<0.01**
AST	0.90	<0.01**
LDH	0.69	<0.01**
GGT	0.28	>0.05

p<0.01: Highly significant, p>0.05: non significant, ALT: Alanine aminotransferase, AST: Aspartate aminotransferase, LDH: Lactate dehydrogenase, GGT: Gama glutamyl transferrase, HIE: Hypoxic Ischemic Encephalopathy.

Using correlation co-efficient test (r) test, there was a highly significant positive correlation between each of ALT, AST, and LDH versus HIE stage. On the other hand, there was a non significant correlation between GGT versus the HIE stage.

Figure (13): Correlation between serum ALT and HIE stage.



III

HIE stage

Figure (14): Correlation between serum AST and HIE

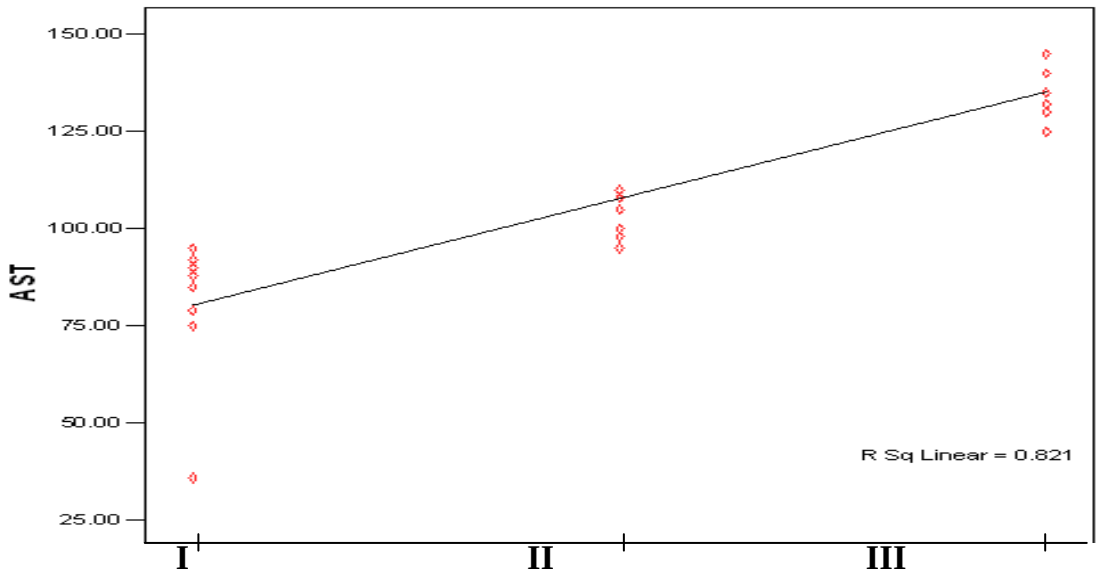


Table (17): Comparison of the mean laboratory variables among cases in 1st day and controls:

Variables	Cases n=٣٠	Controls n=10	t	P
ALT	91.6±31	37.6±3	5	<0.01**
AST	105±25	32.8±2.9	8	<0.01**
LDH	889±167	269±33	11	<0.01**
GGT	9.4±2.1	9.9±2.1	0.6	>0.05
Albumin	3.2±0.3	2.9±0.1	2.8	>0.05
TB	3.7±0.9	0.7±0.14	9	<0.01**
DB	0.57±0.2	1±0.03	3	<0.01**

*** p <0.01: Highly significant, p >0.05: non-significant.*

There was a highly significant difference between cases and controls concerning all laboratory variables except for serum albumin and GGT levels where a non significant difference was detected.

Figure (15): Comparison between cases and controls as regards **ALT**:

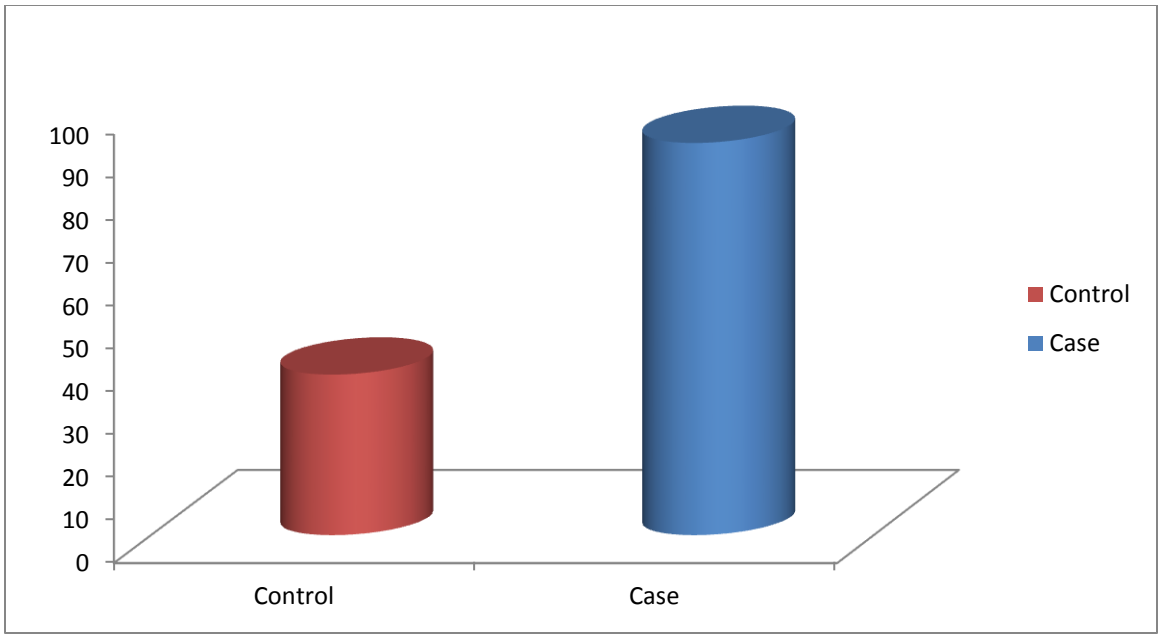


Figure (16): Comparison between cases and controls as regards **AST**:

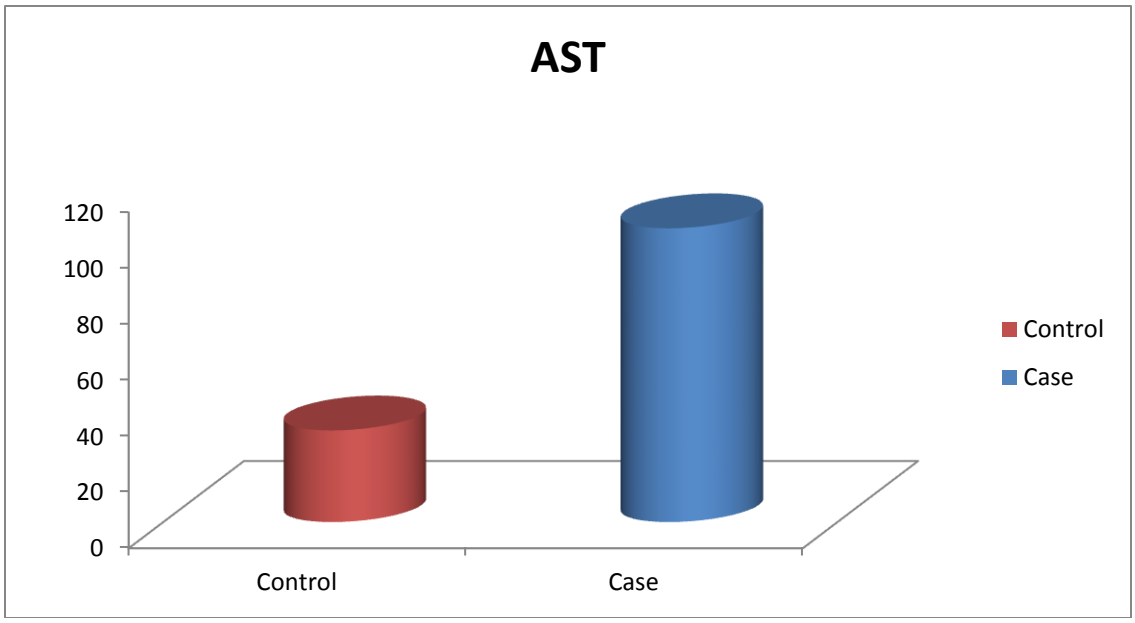


Figure (17): Comparison between cases and controls as regards **GGT**: