"Results"

Table (1) and figure (1) showed fasting and post prandial blood pyruvic acid levels in different normal control groups. The fasting blood pyruvic acid levels in children group vary from (0.06 to 0.11 m mol/L) and the mean values were (0.08 ± 0.004 m mol/L). And the post prandial blood pyruvic acid levels in children group also vary from (0.09 - 0.16 m mol/L) and the mean values were (0.128 ± 0.007 m mol/L).

In adolescent group the fasting and post prandial blood pyruvic acid levels vary from (0.06 - 0.11 m mol/L and 0.07 - 0.16 m mol/L) and the mean values were (0.08 ± 0.003 m mol/L and 0.117 ± 0.006 m mol/L) respectively. They were decreased when compared with the children group and the percentage decrease were 5 in fasting and 7 in post prandial, but these decreases were insignificant.

In adult control group [table (1) and figure (1)] the fasting and post prandial blood pyruvic acid levels vary from (0.05 - 0.11 m mol/L and 0.05 - 0.14 m mol/L) respectively and the mean values were (0.078 ± 0.003 m mol/L and 0.108 ± 0.004 m mol/L) respectively. They were decreased when compared with the adolescent group and the percentage decrease were 2 and

7 respectively, but these decreases were also insignificant. But when we compared the fasting and post prandial blood pyruvic acid levels with the children group we found that both were decreased and the percentage decrease were 7 in the fasting which was insignificant but 16 in the case of post prandial which was significant ($P<0.005^{**}$).

Table (2) and figure (2) were showing fasting and post prandial blood pyruvic acid levels in different bilharzial stages.

Mean blood pyruvic acid levels in patients with simple bilharziasis during the fasting state (0.079 ± 0.003 m mol/L) were found to be insignificantly changed as compared to those of control (0.08 ± 0.002 m mol/L). While the post prandial blood pyruvic acid levels were elevated in these patients and the mean values were (0.126 ± 0.006 m mol/L) as compared to control (0.115 ± 0.003 m mol/L) and the percentage increase was 10 which was insignificant.

Mean blood pyruvic acid levels in patients with bilharzial hepatomegally [table (2) and figure (2)] during the fasting state (0.094 ± 0.006 m mol/L) were elevated as compared to those of control (0.08 ± 0.002 m mol/L) and the percentage

increase was 18. Also post prandial blood pyruvic acid levels were elevated in these patients and the mean values were (0.139 ± 0.005 m mol/L) as compared to control (0.115 ± 0.003 m mol/L) and the percentage increase was 21. The percentage increase in both fasting and post prandial were statistically significant with a p value $<0.01^{**}$.

Mean blood pyruvic acid levels in patients with bilharzial hepatosplenomegally [table (2) and figure (2)] during the fasting state (0.124 ± 0.011 m mol/L) were elevated as compared to those of control (0.080 ± 0.002 m mol/L) and the percentage increase was 57 which was very highly significant ($P<0.0005^{***}$). Also the post prandial blood pyruvic acid levels were also elevated in these patients and the mean values were (0.159 ± 0.007 m mol/L) as compared to control (0.115 ± 0.003 m mol/L) and the percentage increase was 38 which was very highly significant ($P<0.0005^{***}$).

Mean blood pyruvic acid levels in patients with bilharzial hepatic fibrosis [table (2) and figure (2)] during the fasting and post prandial state (0.145 ± 0.0126 m mol/L and 0.193 ± 0.006 m mol/L) were elevated as compared to those of control (0.08 ± 0.002 m mol/L and 0.115 ± 0.003 m mol/L). And the percentage increase were 82 and 69 respectively. The

percentage increase of both fasting and post prandial were statistically significant with a p value $<0.0005^{***}$.

Table (3) and figure (3) showed fasting and post prandial blood pyruvic acid levels in patients with other parasitic infestation.

Mean blood pyruvic acid levels in patients with other parasitic infestation during the fasting state (0.097 ± 0.007 m mol/L) were elevated as compared to those of control (0.080 ± 0.002 m mol/L) and the percentage increase was 21 which is significant with a p value $<0.0125^{*}$. Also post prandial blood pyruvic acid levels were elevated in these patients and the mean values were (0.123 ± 0.008 m mol/L) as compared to control (0.115 ± 0.003 m mol/L) and the percentage increase was 8 but it was insignificant.

Table (4) and figure (4) were showing fasting and post prandial blood pyruvic acid levels in acute and chronic hepatitis as compared to control.

Mean blood pyruvic acid levels in patients with acute hepatitis [table (4) and figure (4)] during the fasting state (0.104 ± 0.010 m mol/L) were elevated as compared to those of

fasting control (0.08 ± 0.002 m mol/L) and the percentage increase was 30 which was statistically significant (<0.0025**). While post prandial blood pyruvic acid levels were decreased in these patients, and the mean values were (0.102 ± 0.011 m mol/L) as compared to control (0.115 ± 0.003 m mol/L) and the percentage decrease was 11 which was insignificant.

Mean blood pyruvic acid levels in patients with chronic hepatitis (table (4) and figure (4)] during the fasting state (0.116 ± 0.015 m mol/L) were elevated as compared to those of fasting control (0.08 ± 0.002 m mol/L) and the percentage increase was 45 which is very highly significant (P<0.0005***). Post prandial blood pyruvic acid were also elevated in these patients and the mean values were (0.14 ± 0.016 m mol/L) as compared to control (0.115 ± 0.003 m mol/L) with percentage increase 22. But the level of significant was lower than fasting value (P<0.05*).

Table (5) and figure (5) were showing fasting and post prandial blood pyruvic acid levels in patients with liver malignancy.

Mean blood pyruvic acid levels in patients with liver malignancy during the fasting and post prandial state (0.114 ±

0.013 m mol/L and 0.188 ± 0.012 m mol/L) were elevated as compared to those of fasting and post prandial control (0.08 ± 0.002 and 0.115 ± 0.003 m mol/L). And the percentage increase were 43 and 64 respectively. The percentage increase of both fasting and post prandial levels were statistically significant with a p value $<P<0.0005^{***}$.

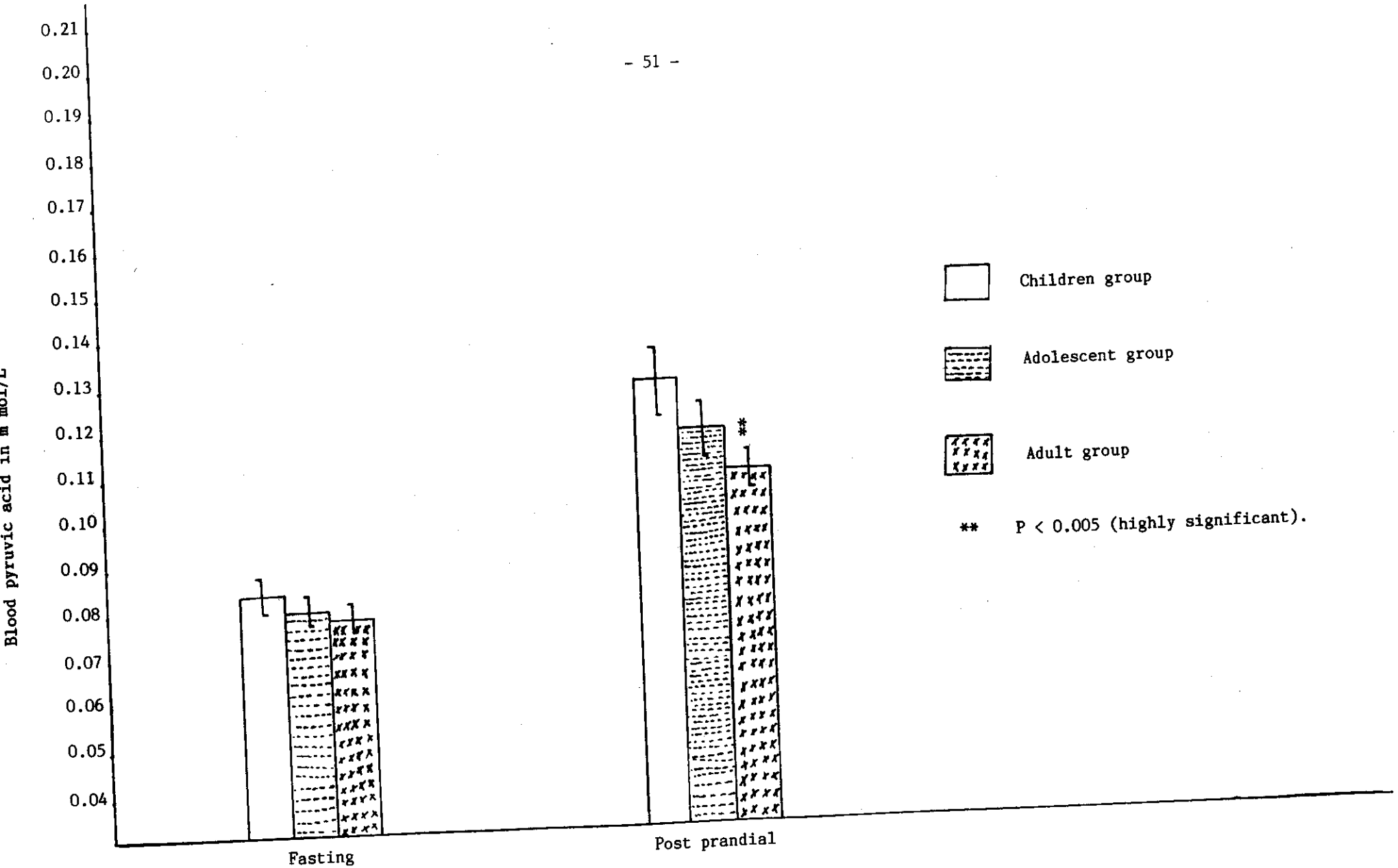
Table (6) and figure (6) showed collective data of fasting and post prandial blood pyruvic acid levels in various hepatic disorder.

Figure (7) showd fasting and post prandial blood puruvic acid levels in various hepatic disorder. The highest value was in active bilharzial hepatic fibrosis followed by liver malignancy.

Table (1): Mean values of normal fasting and post prandial blood pyruvic acid levels in different age groups (m mol/L).

Control group	No	Blood pyruvic acid in m mol/L			
		Fasting		Post prandial.	
		Range	Mean ± S E	Range	Mean ± S E
Children group.	16	0.06 - 0.11	0.084 ± 0.004	0.09 - 0.16	0.128 ± 0.007
Adolescent group.	23	0.06 - 0.11	0.08 ± 0.003	0.07 - 0.16	0.117 ± 0.006
Adult group.	41	0.05 - 0.11	0.078 ± 0.003	0.05 - 0.14	0.108 ± 0.004**

$P < 0.005^{**}$ Highly significant (between adult and children).



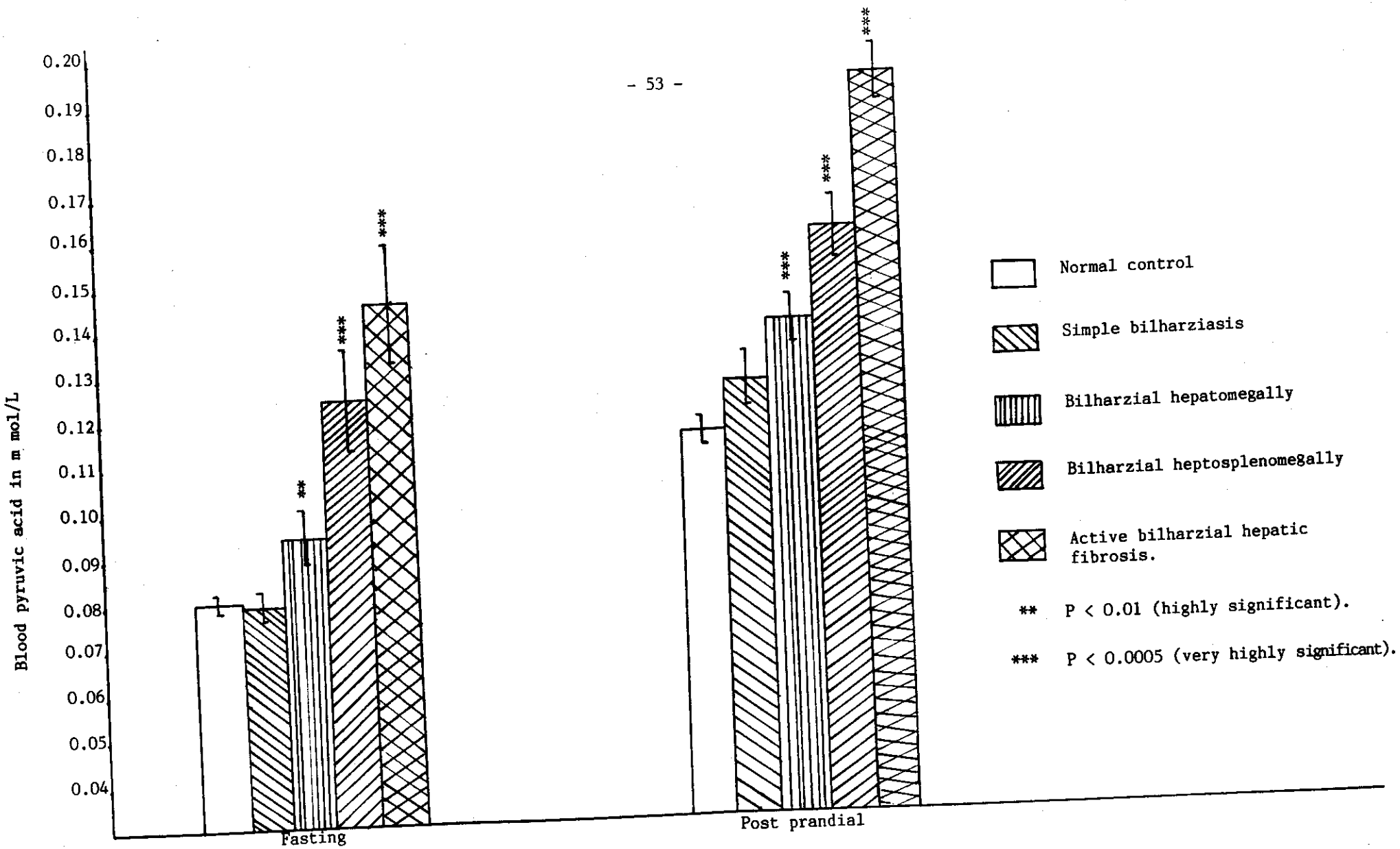
(Figure 1): Mean values ± SE of normal fasting and post prandial blood pyruvic acid levels in different age groups.

Table (2): Fasting and post prandial blood pyruvic acid levels in different bilharzial stages (m mol/L).

	Normal control		Simple bilharziasis		Bilharzial hepatomegally		Bilharzial hepatosplenomegally		Active bilharzial hepatic fibrosis	
	Fasting	Post prandial	Fasting	Pos prandial	Fasting	Post prandial	Fasting	Post prandial	Fasting	Post prandial
Number of cases	80	80	14	14	10	10	7	7	6	6
Range	0.05–0.11	0.05–0.16	0.07–0.10	0.09–0.15	0.07–0.13	0.11–0.16	0.09–0.16	0.14–0.18	0.10–0.18	0.17–0.21
$\bar{X}$ ± SE	0.08±0.002	0.115±0.003	0.079±0.003	0.126±0.006	0.094±0.006	0.139±0.005	0.124±0.011	0.159±0.007	0.145±0.013	0.193±0.006
"t"			0.123	1.331	2.407	2.528	5.809	3.822	8.360	19.08
P			> 0.45	> 0.05	< 0.01**	< 0.01**	< 0.0005***	< 0.0005***	< 0.0005***	< 0.0005***
% change			1% ↓	10% ↑	18% ↑	21% ↑	57% ↑	38% ↑	82% ↑	69% ↑

** Hihgly significant at 1% level of probability

*** Very highly significant.

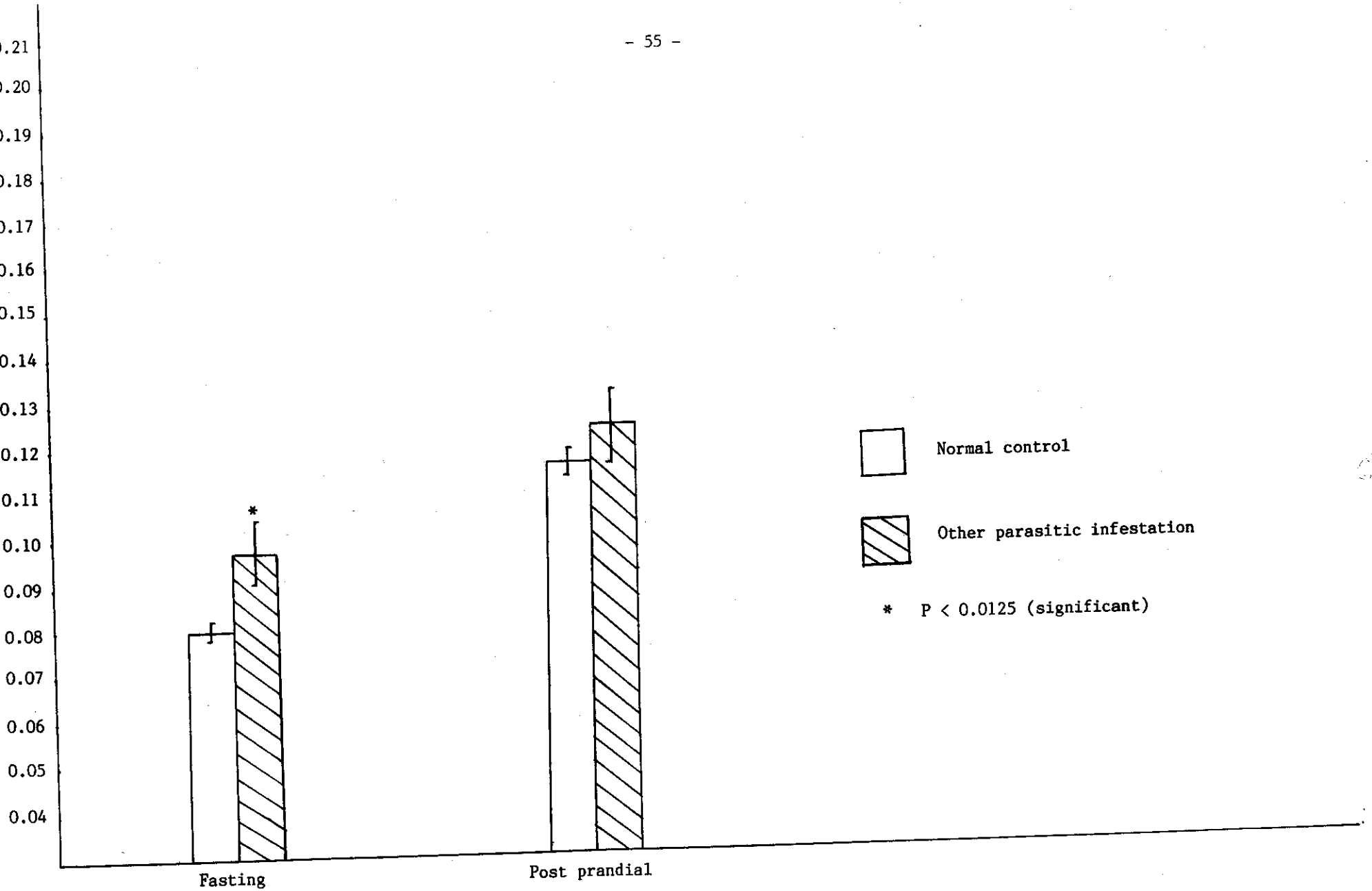


(Figure 2): Mean values ± SE of fasting, and post prandial blood pyruvic acid levels in different bilharzial stages.

Table (3): Fasting and post prandial blood pyruvic acid levels in other parasitic infestation (m mol/L).

	Normal control		Other parasitic infestation	
	Fasting	Post prandial	Fasting	Post prandial
Number of cases	80	80	6	6
Range	0.05 - 0.11	0.05 - 0.16	0.08 - 0.11	0.16 - 0.15
$\overline{)(}$ ± SE	0.080 ± 0.002	0.115 ± 0.003	0.097 ± 0.007	0.123 ± 0.008
"t"			2.330	0.700
P			< 0.0125*	> 0.2
% change			21 % ↑	8 % ↑

* Significant at 5% level of probability.



(Figure 3): Mean values ± SE of fasting and post prandial blood pyruvic acid levels in other parasitic infestation group.

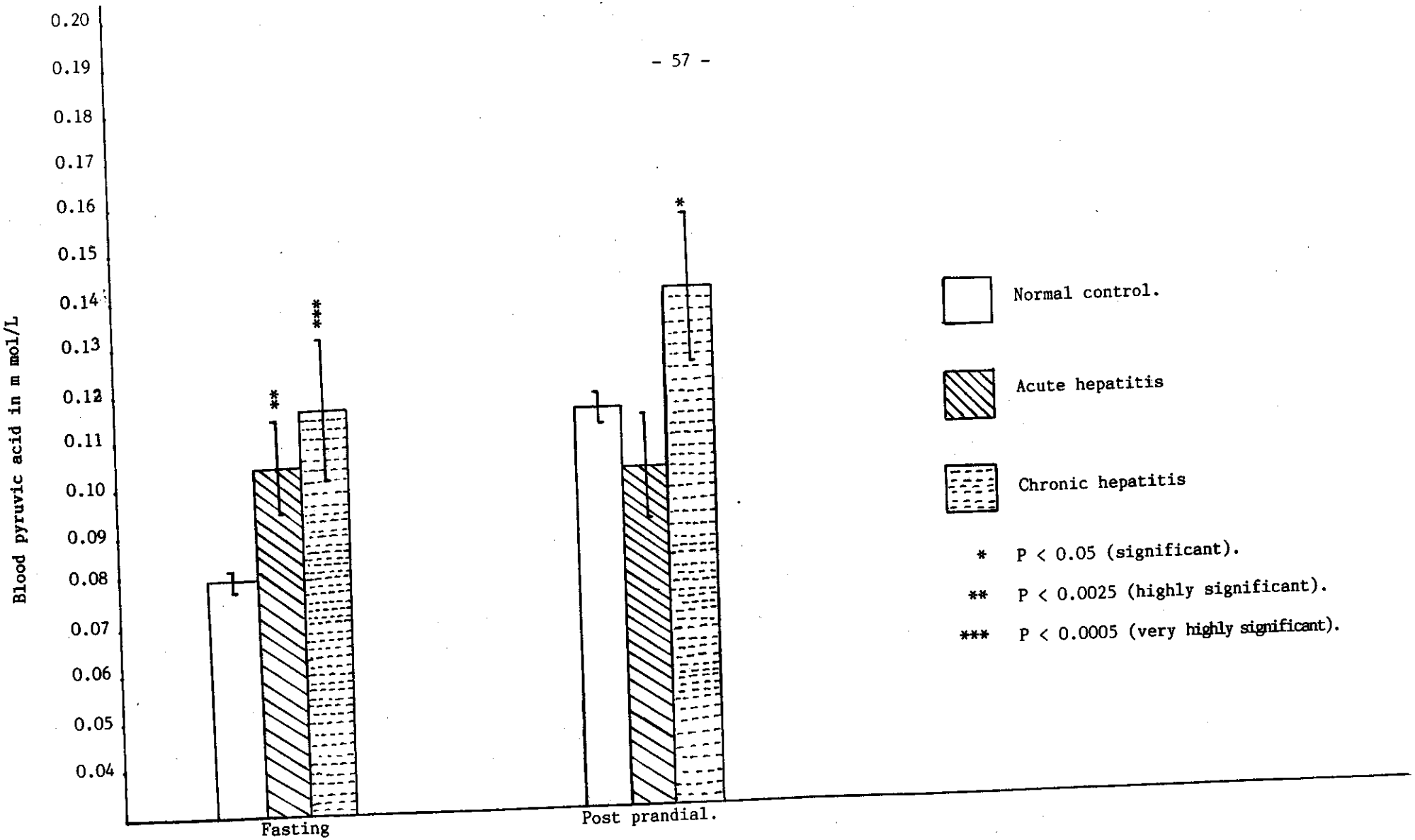
Table (4): Fasting and post prandial blood pyruvic acid levels in acute and chronic hepatitis (m mol/L).

	Normal control		Acute hepatitis		Chronic hepatitis	
	Fasting	Post prandial	Fasting	Post prandial	Fasting	Post prandial
Number of cases	80	80	5	5	5	5
Range	0.05–0.11	0.05–0.16	0.07–0.13	0.07–0.13	0.07–0.15	0.09–0.18
$\overline{)(}$ ± S E	0.08 ± 0.002	0.115±0.003	0.104±0.010	0.102±0.011	0.116±0.015	0.14 ± 0.016
"t"			2.979	0.925	4.235	1.86876
P			< 0.0025**	> 0.15	< 0.0005***	< 0.05*
% change			30% ↑	11% ↓	45% ↑	22% ↑

* Significant at 5% level of probability.

** Highly significant at 1% level of probability.

*** Very highly significant at 0.1% level of probability.

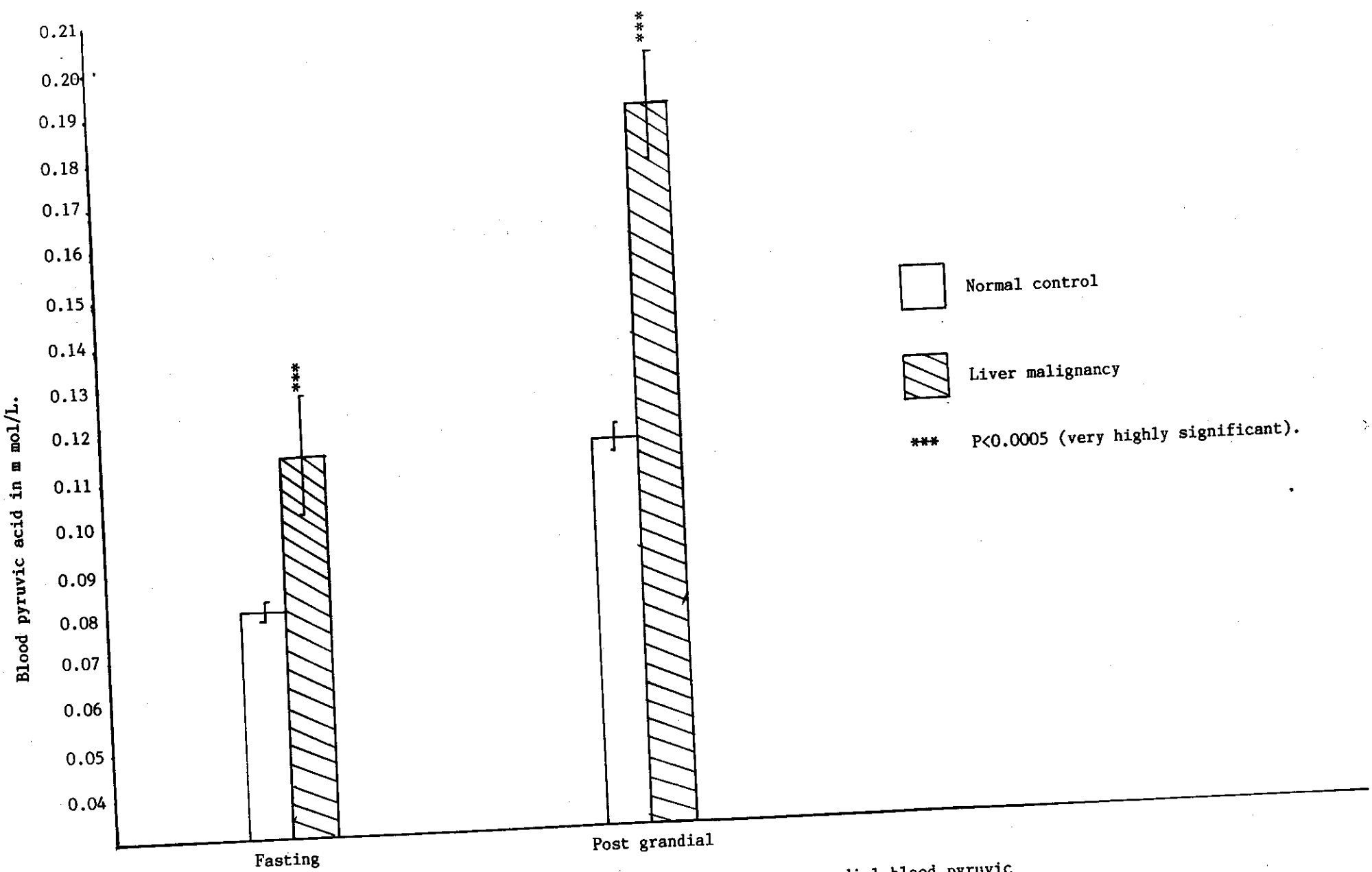


(Figure 4) Mean values ± SE of fasting and post prandial blood pyruvic acid levels in acute and chronic hepatitis.

Table (5): Fasting and post prandial blood pyruvic acid levels in liver malignancy group (m mol/L).

	Normal control		Liver malignancy	
	Fasting	Post prandial	Fasting	Post prandial
Number of cases	80	80	5	5
Range	0.05 - 0.11	0.05 - 0.16	0.08 - 0.15	0.15 - 0.22
$\overline{X}$ ± SE	0.080 ± 0.002	0.115 ± 0.003	0.114 ± 0.013	0.188 ± 0.012
"t"			4.103	5.362
P			< 0.0005***	< 0.0005***
% change			43 % ↑	64 % ↑

*** Very highly significant at 0.1% level of probability.



(Figure 5): Mean values ± SE of fasting and post prandial blood pyruvic acid levels in liver malignancy group.

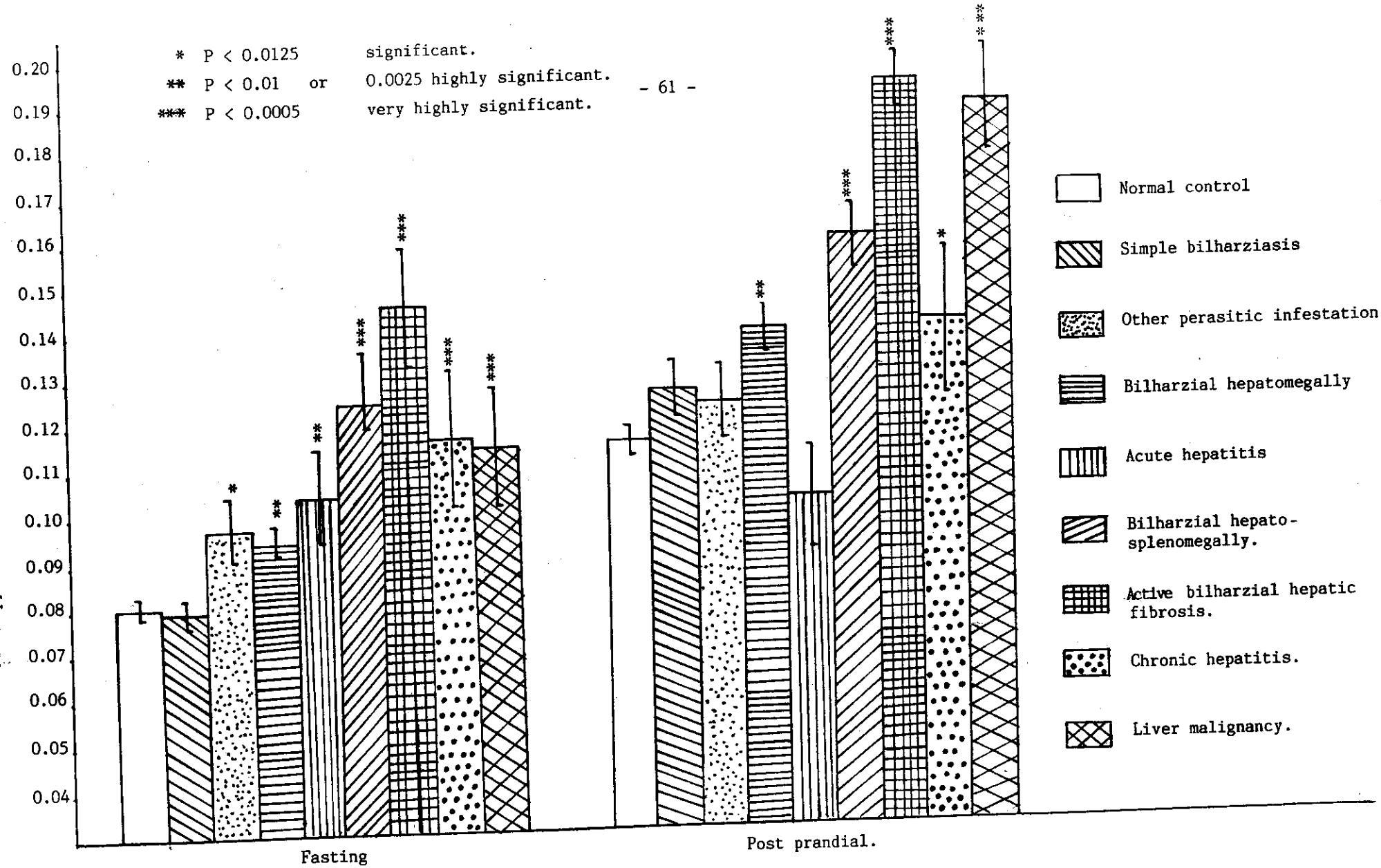
Table (6): Collective data: Shaowing fasting and post prandial blood pyruvic acid levels in various heaptic disorder (m mol/L).

Cases	No.	Range		$\bar{X}$ ± SE		P		% change	
		Fasting	Post prandial	Fasting	Post prandial	Fasting	Post prandial	Fasting	Post prandial
Normal control	80	0.05 - 0.11	0.05 - 0.16	0.08 ± 0.002	0.115 ± 0.003				
Pathological groups:									
Bilharzial group:									
Simple bilharziasis.	14	0.07 - 0.10	0.09 - 0.15	0.079 ± 0.003	0.126 ± 0.007	> .45	>0.05	1 % ↓	10 % ↑
Bilharzial hepatomegally.	10	0.07 - 0.13	0.11 - 0.16	0.094 ± 0.006	0.139 ± 0.005	<0.01**	<0.01**	18 % ↑	21 % ↑
Bilharzial hepatosplenomegally.	7	0.09 - 0.16	0.14 - 0.18	0.124 ± 0.011	0.159 ± 0.007	<0.0005***	<0.0005***	57 % ↑	38 % ↑
Active bilharzial hepatic fibrosis.	6	0.10 - 0.18	0.17 - 0.21	0.145 ± 0.013	0.193 ± 0.006	<0.0005***	<0.0005***	82 % ↑	69 % ↑
Other parasitic infestation group:	6	0.08 - 0.11	0.10 - 0.15	0.097 ± 0.007	0.123 ± 0.008	<0.0125*	> 0.2	21 % ↑	8 % ↑
Viral hepatitis group:									
Acute hepatitis.	5	0.07 - 0.13	0.07 - 0.13	0.104 ± 0.010	0.102 ± 0.011	<0.0025**	> 0.15	30 % ↑	11 % ↓
Chronic hepatitis.	5	0.07 - 0.15	0.09 - 0.18	0.116 ± 0.015	0.14 ± 0.016	<0.0005***	< 0.05*	45 % ↑	22 % ↑
Liver malignancy group.	5	0.08 - 0.15	0.15 - 0.22	0.114 ± 0.013	0.188 ± 0.012	<0.0005***	<0.0005***	43 % ↑	64 % ↑

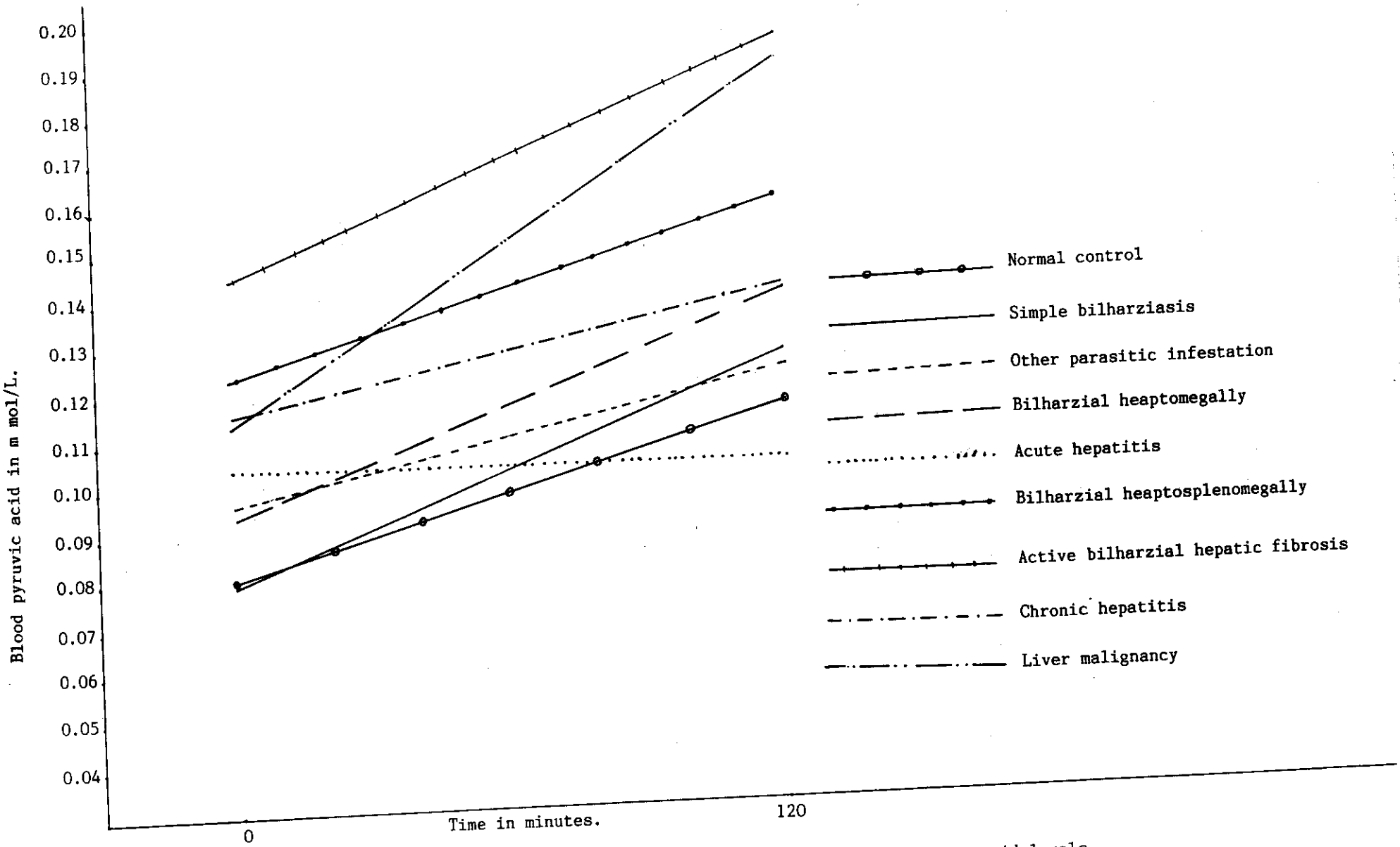
* Significant at 5% level of probability.

** Hihgly significant at 1% level of probability.

*** Very highly significant at 0.1% level of probability.



(Figure 6): Mean values ± SE of fasting and post prandial blood pyruvic acid levels in various hapatic disorder.



(Figure 7): Mean values of fasting and post prandial blood pyruvic acid levels in various hepatic disorder as compaired to the nomral control.