This study included a total 100 newborns, of these infants 24 newborns of weight less than 2500 gm ( Group 1 ), 58 newborns of weight from 2500 : 4000 gm ( Group 2 ) and 18 newborns of weight more than 4000 gm ( Group 3 ). These newborns included 45 male and 55 female .
*(table 1 )*

Our results showed that :-

* The mean age of mothers was 29.92 , the youngest was 22 years old and the oldest was 44 years old. The birth rank ( parity ) as follows: 41 were primiparas , 27 were having second delivery, 18 a third and 14 were having more than 3 deliveries of these 76 are NVD and 24 are CS .
*(table 2 )*

* There were no complicated pregnancies .

**GROUP 1 :-**

* This group included 10 male and 14 female infants ,of these 14 were preterm and others were fullterm babies.

* The mean weight was 2011.25 ± 399.0 (gm ). *(table 3)* The mean length was 45.0625 ± 3.5 (cm).*(table 4 &figure 4)* The mean head circumference was 31.7083 ±2.5 (cm ).*(table 5 &figure 5 )* The mean midarm circumference was 9.0333± 1.2 (cm) .*(table 6 &figure 6)*

* The mean plasma level of Ca was 7.39 ±0.66(gm / dl) *(table 7&figure 7)*,of Mg 1.52±0.54 (mg / dl) *( table 8 & figure 8)* and of Fe was 131.58 ±17.87 ( μg / dl ).*(table 9 & figure 9)*

* There was significant positive correlation between Ca and weight ,head circumference ,length and midarm circumference Other significant correlation between iron and weight ,length , midarm circumference and head circumference .*(table 12 :15 )*

* There was no relation between Mg and other variables

**GROUP 2 :-**

* This group included 24 male and 34 female infants and all were fullterm babies .

* The mean weight was 3428.27±307.62 ( gm ) *(table 3 )* .The mean length was 49.6466±1.42 (cm)*(table 4& figure 4 )* .The mean head circumference was 34.6983±0.99 (cm ) *(table 5 & figure 5 )*.

The mean midarm circumference was 11.6466±0.94 ( cm)*(table 6 &figure 6 )*

* The mean plasma level of Ca was 11.06 ± 1.18 ( mg / dl )*(table 7 & figure 7 )*, of Mg was 2.09 ± 0.21( mg / dl ) *( table 8 & figure 8 )* and of Fe was 200.1 ± 45.02 ( µg / dl) .*(table 9 & figure 9 )*

* There was significant correlation between Ca level and weight , length and midarm circumference .*(table 12:15 )*

* There was significant relation between iron with only weight and also Mg with weight .*(table 12 :15 )*

**GROUP 3 :-**

* This group included 11male and 7 female infants and all were fullterm babies .

* The mean of anthropometric measurements were :The weight was 4103.88 ± 147.45 ( gm ) *(table 3 )*, length was 51.0556 ± 1.2 ( cm )*(table 4 &figure 4 )*, head circumference was 35.75 ± 0.46 ( cm )*(table 5 & figure 5 )* and midarm circumference was 12.75 ± 0.57 ( cm ) *(table 6 & figure 6 )*.

* The mean plasma level of Ca was 11.67 ± 0.76 ( mg /dl ) *(table 7& figure 7 )*, of Mg was 2.2 ± 0.14 ( mg / dl)*(table8 & figure 8 )* and of Fe was 242.45 ± 50.16 ( µg / dl ) *(table 9 & figure 9 )*.

* There was no significant relation of birth weight , length , head circumference and midarm circumference on level of Ca , Mg and Fe .*(table 12 : 15 )*

**THE RELATION BETWEEN THE THREE GROUPS : -**

* **The F-test (Analysis of variance ANOVA) was used for correlation between the three groups. There was a significant difference between groups in Ca,Mg ,and Fe levels ( table5:7)**

* By doing T-test , we get good positive correlation between level of Ca , Mg and Fe with gestational age *(table 10 )* . Also by same test , there was no significant difference between male and female infants in levels of Ca , Mg and Fe . *(table 11)*

*** Comparing the obtained date for metals and different parameters. It was noticed that there was a positive relation** between *(table 12 : 15 & figure 1 :3 )* :-

** Ca / weight ( r = 0.8553 p .000 )

** Ca / length ( r = 0.7224 p .000 )

** Ca / midarm circumference ( r = 0.7971 p .000 )

** Ca / head circumference ( r = 0.6809 p .000 )

** Mg / weight ( r = 0.6368 p .000 )

** Mg / length ( r = 0.4331 p .000 )

** Mg / midarm circumference ( r = 0.5535 p .000 )

** Mg / head circumference ( r = 0.4973 p .000 )

** Fe / weight ( r = 0.6996 p .000 )

** Fe / length ( r = 0.5245 p .000 )

** Fe / midarm circumference ( r = 0.6363 p .000 )

** Fe / head circumference ( r = 0.5487 p .000 )

* The pregnancy rate ( parity ) and the mode of delivery show no relation on the level of Ca , Mg and Fe .

* There was good relation between plasma level of Ca and Mg *(table 16 )* .

### Table ( 1 ) Distribution Of Sex Between Groups

| Group | Male | % | Female | % | Total Row |
|---|---|---|---|---|---|
| Grp. 1 | 10 | 41.67 | 14 | 58.33 | 24 |
| Grp. 2 | 24 | 41.38 | 34 | 58.62 | 58 |
| Grp. 3 | 11 | 61.11 | 7 | 38.89 | 18 |
| Total Column | 45 | 45 % | 55 | 55 % | 100 |

## Table ( 2) Distribution Of Mode Of Delivery Between Groups

| Group | NVD | % | C.S | % | Total Row |
|---|---|---|---|---|---|
| Grp. 1 | 20 | 83.33 | 4 | 16.67 | 24 |
| Grp. 2 | 42 | 72.41 | 16 | 27.59 | 58 |
| Grp. 3 | 14 | 77.78 | 4 | 22.22 | 18 |
| Total Column | 76 | 76 % | 24 | 24 % | 100 |

## Table ( 3 ) Variable Of Weight ( gm ) According to Groups

| Group | Count | Mean | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| Grp. 1 | 24 | 2011.25 | 399.0022 | 1740.00 | 2490.00 |
| Grp. 2 | 58 | 3428.27 | 307.6290 | 2700.00 | 3900.00 |
| Grp. 3 | 18 | 4103.88 | 147.4544 | 4010.00 | 4600.00 |
| Total | 100 | 3209.800 | 785.343 | 1140.00 | 4600.00 |

| F- Ratio | P |
|---|---|
| 265.688 | 000.00 |

*Significance if $p < 0.05$

| | Grp 1 | Grp 2 | Grp 3 |
|---|---|---|---|
| Grp. 1 | | | |
| Grp. 2 | * | | |
| Grp. 3 | * | * | |

## Table ( 4 ) Variable Of Length ( cm ) According to Groups

| Group | Count | Mean | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| Grp. 1 | 24 | 45.0625 | 3.5149 | 38.5000 | 50.0000 |
| Grp. 2 | 58 | 49.6466 | 1.4297 | 46.0000 | 54.0000 |
| Grp. 3 | 18 | 51.0556 | 1.2234 | 50.0000 | 55.0000 |
| Total | 100 | 48.8000 | 3.0055 | 38.5000 | 55.0000 |

| F- Ratio | P |
|---|---|
| 53.3135 | 000.00 |

*Significance if $p < 0.05$

| | Grp 1 | Grp 2 | Grp 3 |
|---|---|---|---|
| Grp. 1 | | | |
| Grp. 2 | * | | |
| Grp. 3 | * | * | |

## Table (5) Variable Of Head circumference (cm) According to Groups

| Group | Count | Mean | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| Grp. 1 | 24 | 31.7083 | 2.5018 | 27.5000 | 35.0000 |
| Grp. 2 | 58 | 34.6983 | 0.9909 | 31.0000 | 36.5000 |
| Grp. 3 | 18 | 35.7500 | 0.4681 | 35.0000 | 36.5000 |
| Total | 100 | 34.1700 | 2.0353 | 27.5000 | 36.5000 |

F- Ratio P
49.2157 000.00
*Significance if $p < 0.05$

| | Grp 1 | Grp 2 | Grp 3 |
|---|---|---|---|
| Grp. 1 | | | |
| Grp. 2 | * | | |
| Grp. 3 | * | * | |

## Table (6 ) Variable Of Midarm circumference ( cm ) According to Groups

| Group | Count | Mean | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| Grp. 1 | 24 | 9.0333 | 1.2071 | 7.0000 | 11.0000 |
| Grp. 2 | 58 | 11.6466 | 0.9413 | 9.0000 | 14.0000 |
| Grp. 3 | 18 | 12.7500 | 0.5752 | 12.0000 | 14.0000 |
| Total | 100 | 11.2180 | 1.6115 | 7.0000 | 14.0000 |

| F- Ratio | P |
|---|---|
| 90.5939 | 000.00 |

*Significance if $p < 0.05$

| | Grp 1 | Grp 2 | Grp 3 |
|---|---|---|---|
| Grp. 1 | | | |
| Grp. 2 | * | | |
| Grp. 3 | * | * | |

## Table ( 7 ) Variable Of Level Plasma Calcium ( mg / dl ) According to Groups

| Group | Count | Mean | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| Grp. 1 | 24 | 7.3900 | 0.6690 | 6.6000 | 8.6000 |
| Grp. 2 | 58 | 11.0602 | 1.7853 | 9.1000 | 15.2000 |
| Grp. 3 | 18 | 11.6772 | 0.7686 | 10.4000 | 12.9000 |
| Total | 100 | 10.2904 | 1.9366 | 6.6000 | 15.2000 |

F- Ratio P
130.8259 000.00
*Significance if $p < 0.05$

| | Grp 1 | Grp 2 | Grp 3 |
|---|---|---|---|
| Grp. 1 | | | |
| Grp. 2 | * | | |
| Grp. 3 | * | * | |

## Table ( 8 ) Variable Of Level of Plasma Mg ( mg / dl ) According to Groups

| Group | Count | Mean | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| Grp. 1 | 24 | 1.5162 | 0.5400 | 1.2000 | 1.5600 |
| Grp. 2 | 58 | 2.0931 | 0.2126 | 1.7000 | 2.9000 |
| Grp. 3 | 18 | 2.2028 | 0.1480 | 2.0000 | 2.5000 |
| Total | 100 | 1.9744 | 0.4076 | 1.2000 | 2.5000 |

| F- Ratio | P |
|---|---|
| 34.1185 | 000.00 |

*Significance if $p < 0.05$

| | Grp 1 | Grp 2 | Grp 3 |
|---|---|---|---|
| Grp. 1 | | | |
| Grp. 2 | * | | |
| Grp. 3 | * | | |

## Table ( 9) Variable Of Level Of Plasma Iron ( mg / dl ) According to Groups

| Group | Count | Mean | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| Grp. 1 | 24 | 131.5792 | 17.8717 | 112.9000 | 163.2000 |
| Grp. 2 | 58 | 200.1224 | 45.0281 | 113.6000 | 318.9000 |
| Grp. 3 | 18 | 242.4500 | 50.1689 | 166.3000 | 335.0000 |
| Total | 100 | 191.2910 | 55.3144 | 112.9000 | 335.0000 |

| F- Ratio | P |
|---|---|
| 40.1592 | 000.00 |

*Significance if $p < 0.05$

| | Grp 1 | Grp 2 | Grp 3 |
|---|---|---|---|
| Grp. 1 | | | |
| Grp. 2 | * | | |
| Grp. 3 | * | * | |

**Table ( 10 ) Distribution Of Plasma Level Of Ca , Mg and Fe According To Gestational Age .**

| | | No Of Cases | Ca | Fe | Mg |
|---|---|---|---|---|---|
| Full Terrm | M | 86 | 10.8253 | 202.0070 | 2.0410 |
| | SD | | 1.510 | 51.977 | 0.290 |
| Preterrm | M | 14 | 7.0043 | 125.4643 | 1.5650 |
| | SD | | 0.372 | 14.506 | 0.712 |
| Test | | | 9.39 | 5045 | 4.41 |
| P | | | 0.000 | 0.000 | 0.000 |

*** Significance if $P < 0.05$**

Table ( 11 ) Distribution Of Plasma Level Of Ca , Mg and Fe According To Sex .

| | | No Of Cases | Ca | Fe | Mg |
|---|---|---|---|---|---|
| Male | M | 45 | 10.5373 | 192.9711 | 1.9673 |
| SD | | | 52.417 | 52.417 | 0.385 |
| Female | M | 55 | 10.0884 | 189.9164 | 1.9802 |
| | SD | | 1.790 | 58.021 | 0.429 |
| Test | | | 1.16 | 5045 | 0.16 |
| P | | | 0.251 | 0.785 | 0.876 |

* Significance if P < 0.05

**Table ( 12 ) Analysis of Plasma Levels Of Ca , Mg , Fe in Relation To Weight In Groups and Total Cases .**

| | | Ca | Mg | Fe |
|---|---|---|---|---|
| Grp 1 24 Cases | r | 0.5908 | 0.0099 | 0.6543 |
| | P | 0.022 * | 0.964 | 0.001 * |
| Grp 2 58 Cases | r | 0.4656 | 0.4541 | 0.2986 |
| | P | 0.000 * | 0.000 * | 0.023 * |
| Grp 3 18 Cases | r | 0.1000 | 0.4847 | 0.1020 |
| | P | 0.969 | 0.042 | 0.687 |
| Total Cases 100 Cases | r | 0.8553 | 0.6368 | 0.6996 |
| | P | 0.000 * | 0.000 * | 0.000 * |

**r ( Correction Factor )**

*** Significance if $P < 0.05$**

Table ( 13 ) Analysis of Plasma Levels Of Ca , Mg , Fe in Relation To Length In Groups and Total Cases .

| | | Ca | Mg | Fe |
|---|---|---|---|---|
| Grp 1 24 Cases | r | 0.6376 | 0.2168 | 0.7045 |
| | P | 0.001 * | 0.309 | 0.000 * |
| Grp 2 58 Cases | r | 0.3538 | 0.2515 | 0.0184 |
| | P | 0.006 * | 0.057 | 0.891 |
| Grp 3 18 Cases | r | 0.4143 | 0.4702 | 0.3054 |
| | P | 0.087 | 0.049 | 0.218 |
| Total Cases 100 Cases | r | 0.7224 | 0.4331 | 0.5245 |
| | P | 0.000 * | 0.000 * | 0.000 * |

**r ( Correction Factor )**

*** Significance if $P < 0.05$**

**Table ( 14 ) Analysis of Plasma Levels Of Ca , Mg , Fe in Relation To Head Circumference In Groups and Total Cases .**

| | | Ca | Mg | Fe |
|---|---|---|---|---|
| Grp 1 24 Cases | r | 0.8029 | 0.0333 | 0.7481 |
| | P | 0.000 * | 0.540 | 0.000 * |
| Grp 2 58 Cases | r | 0.0012 | 0.2106 | 0.0046 |
| | P | 0.993 | 0.113 | 0.973 |
| Grp 3 18 Cases | r | 0.0808 | 0.0753 | 0.2641 |
| | P | 0.750 | 0.766 | 0.290 |
| Total Cases 100 Cases | r | 0.6809 | 0.4973 | 0.5487 |
| | P | 0.000 * | 0.000 * | 0.000 * |

**r ( Correction Factor )**
*** Significance if $P < 0.05$**

Table ( 15 ) Analysis of Plasma Levels Of Ca , Mg , Fe in Relation To Midarm Circumference In Groups and Total Cases .

| | | Ca | Mg | Fe |
|---|---|---|---|---|
| Grp 1 24 Cases | r | 0.6554 | 0.0479 | 0.6316 |
| | P | 0.001 * | 0.824 | 0.001 * |
| Grp 2 58 Cases | r | 0.3994 | 0.3251 | 0.1189 |
| | P | 0.002 * | 0.013 * | 0.374 |
| Grp 3 18 Cases | r | 0.09088 | 0.1814 | 0.5240 |
| | P | 0.697 | 0.471 | 0.26 * |
| Total Cases 100 Cases | r | 0.7971 | 0.5535 | 0.6363 |
| | P | 0.000 * | 0.000 * | 0.000 * |

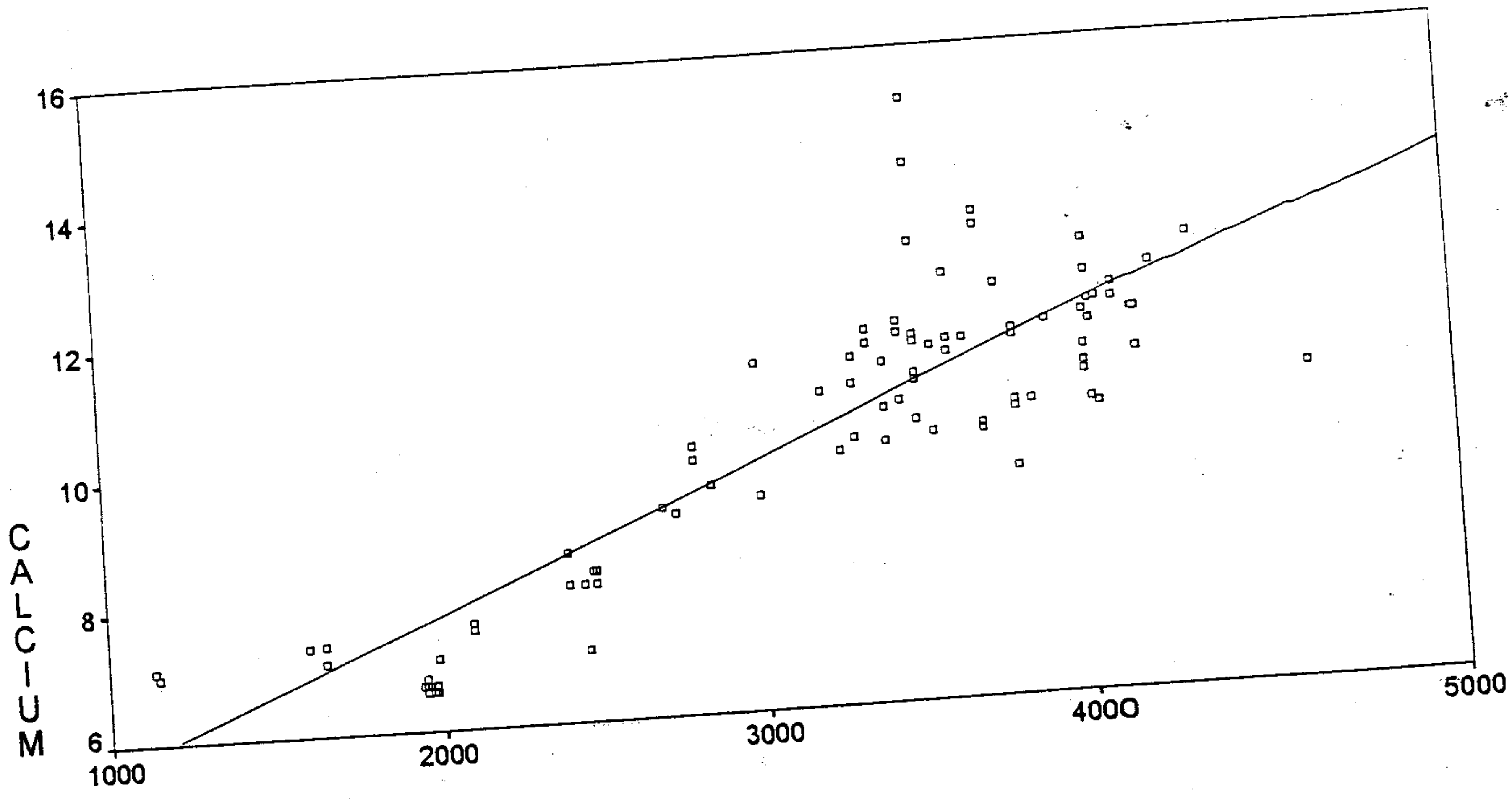
**r ( Correction Factor )**

*** Significance if $P < 0.05$**

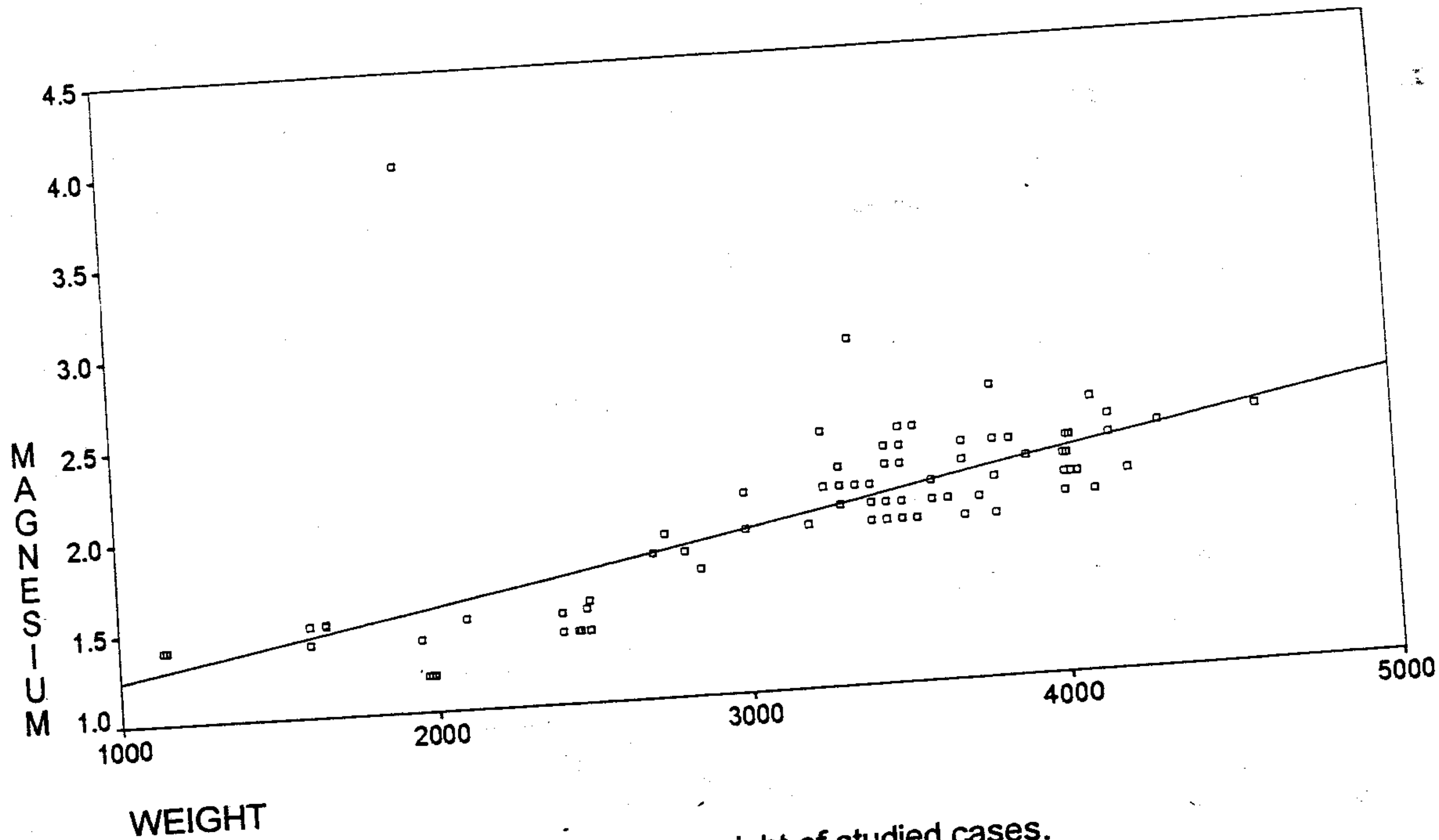
**Table ( 16 ) Relation Between Ca With Mg And Fe Specifically In Each Groups and In Total Cases .**

| | | Grp 1 | Grp 2 | Grp 3 | Total Cases |
|---|---|---|---|---|---|
| Mg | r | 0.0950 | 0.1888 | 0.2023 | 0.5784 |
| | P | 0.659 | 0.156 | 0.421 | 0.000 * |
| Fe | r | 0.5525 | 0.1112 | 0.3526 | 0.2641 |
| | P | 0.005 * | 0.406 | 0.151 | 0.290 |

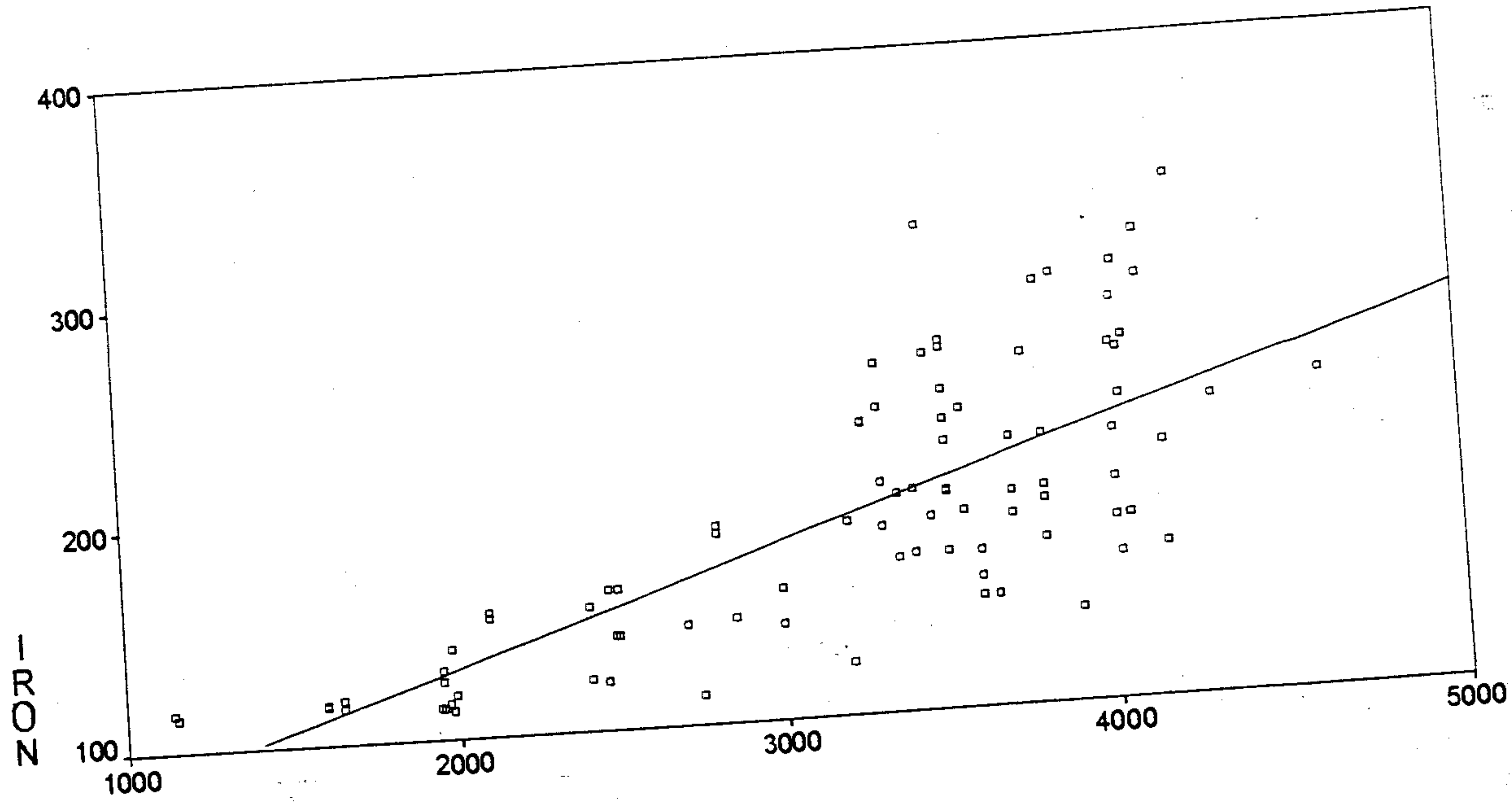
**r ( Correction Factor )**
*** Significance if $P < 0.05$**



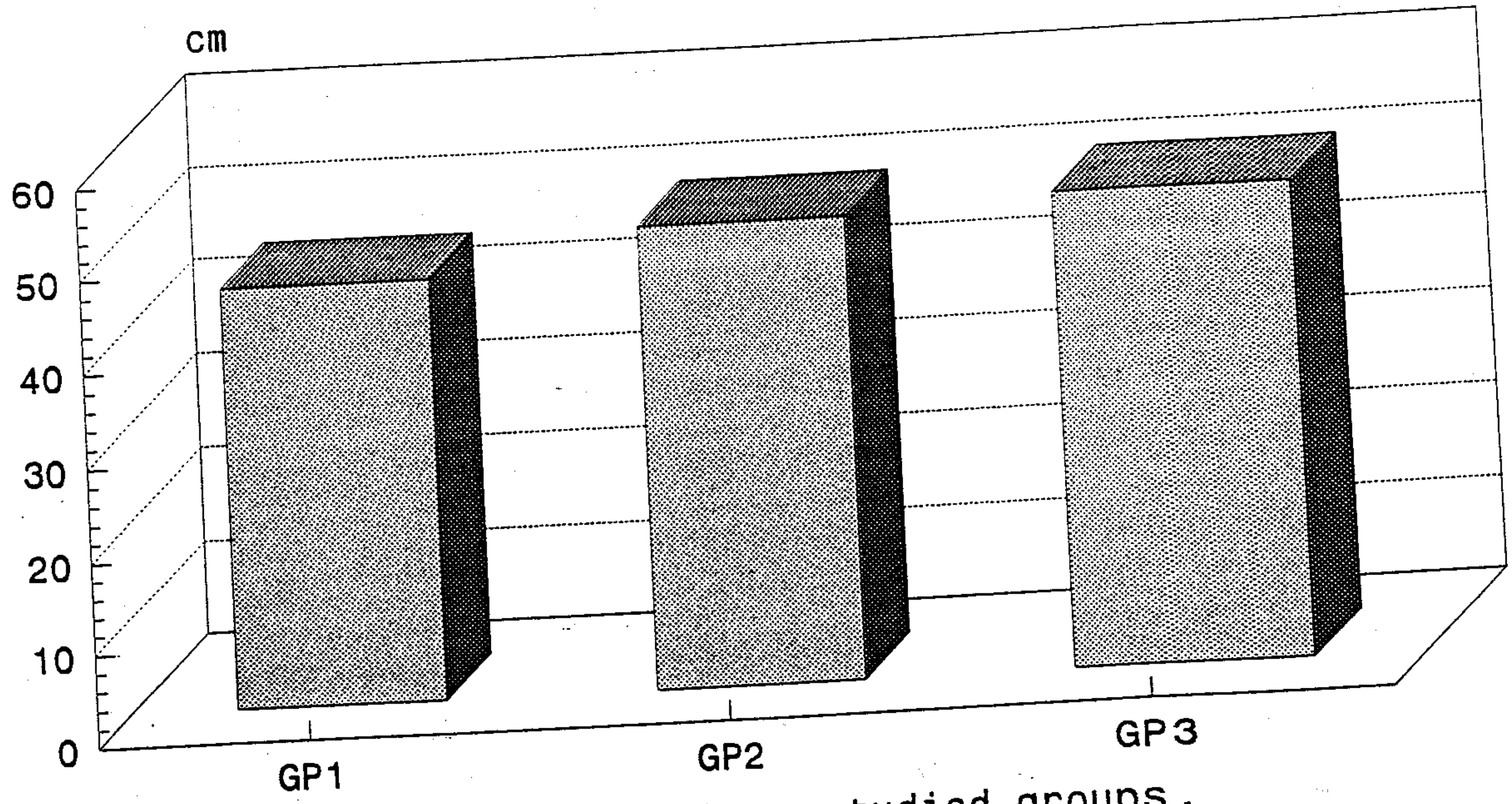

Fig(1) regression of calcium over weight of studied cases.



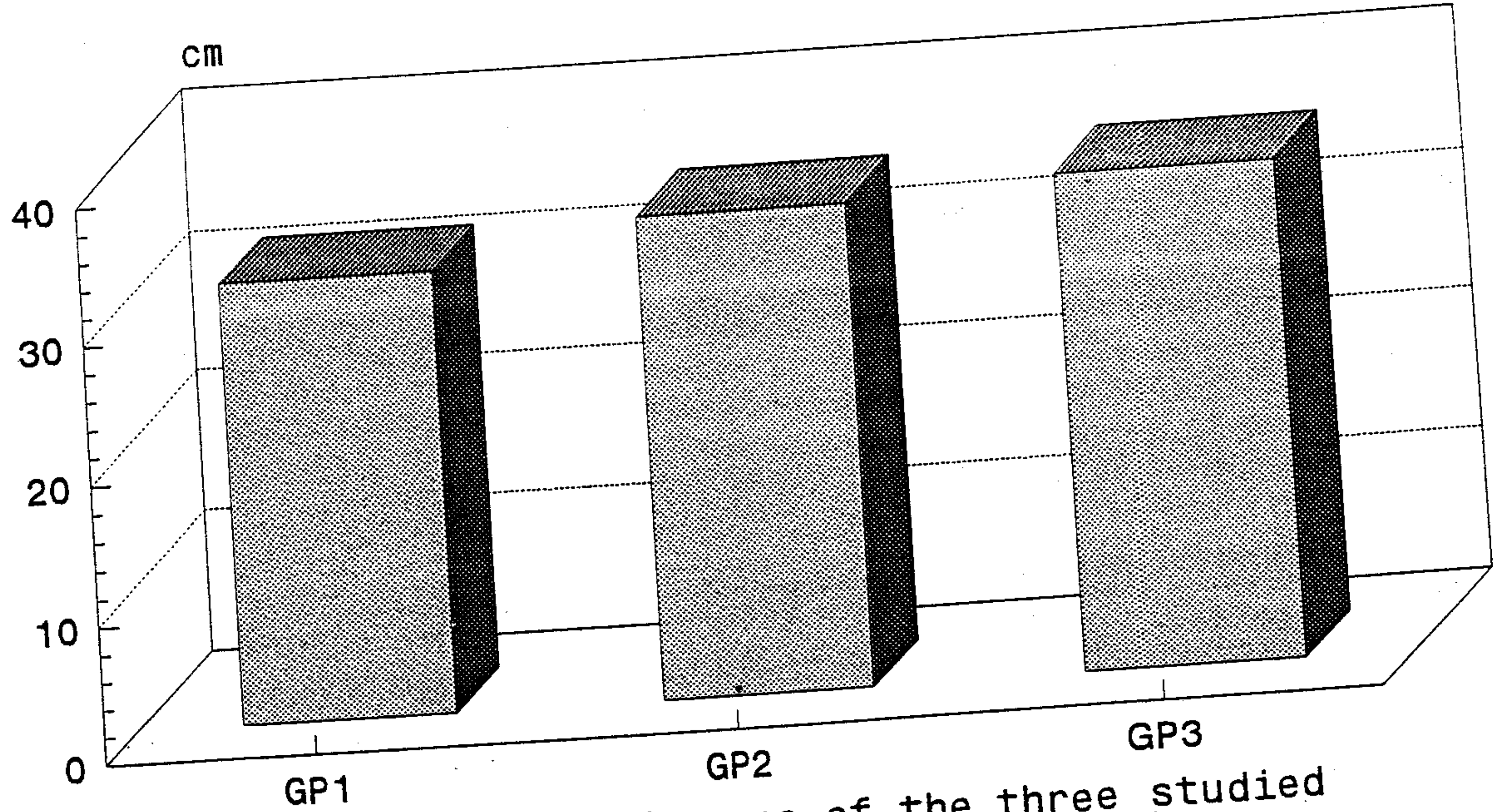

Fig(2) regression of magnesium over weight of studied cases.



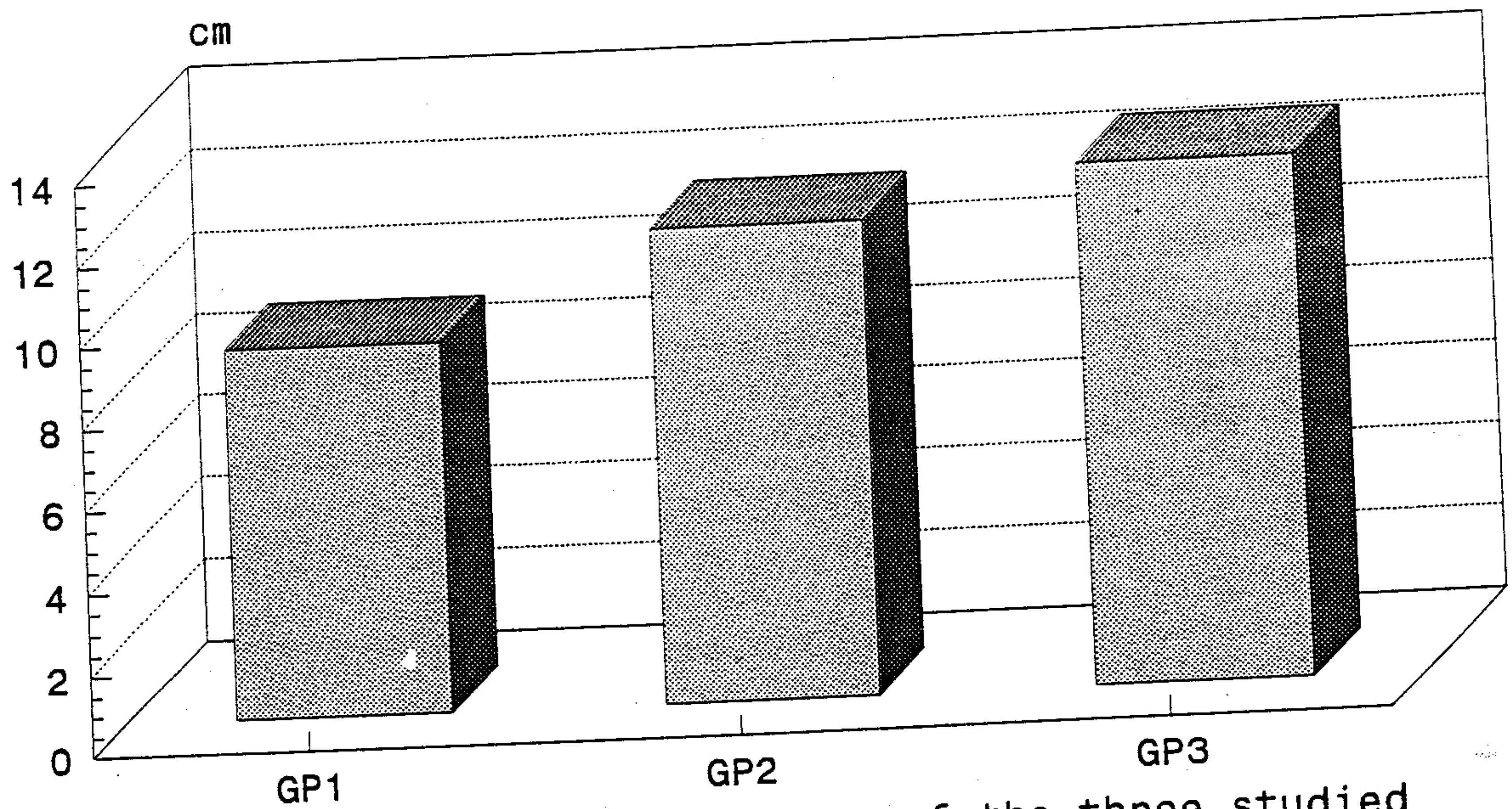

Fig(3) regression of iron over weight of studied cases.



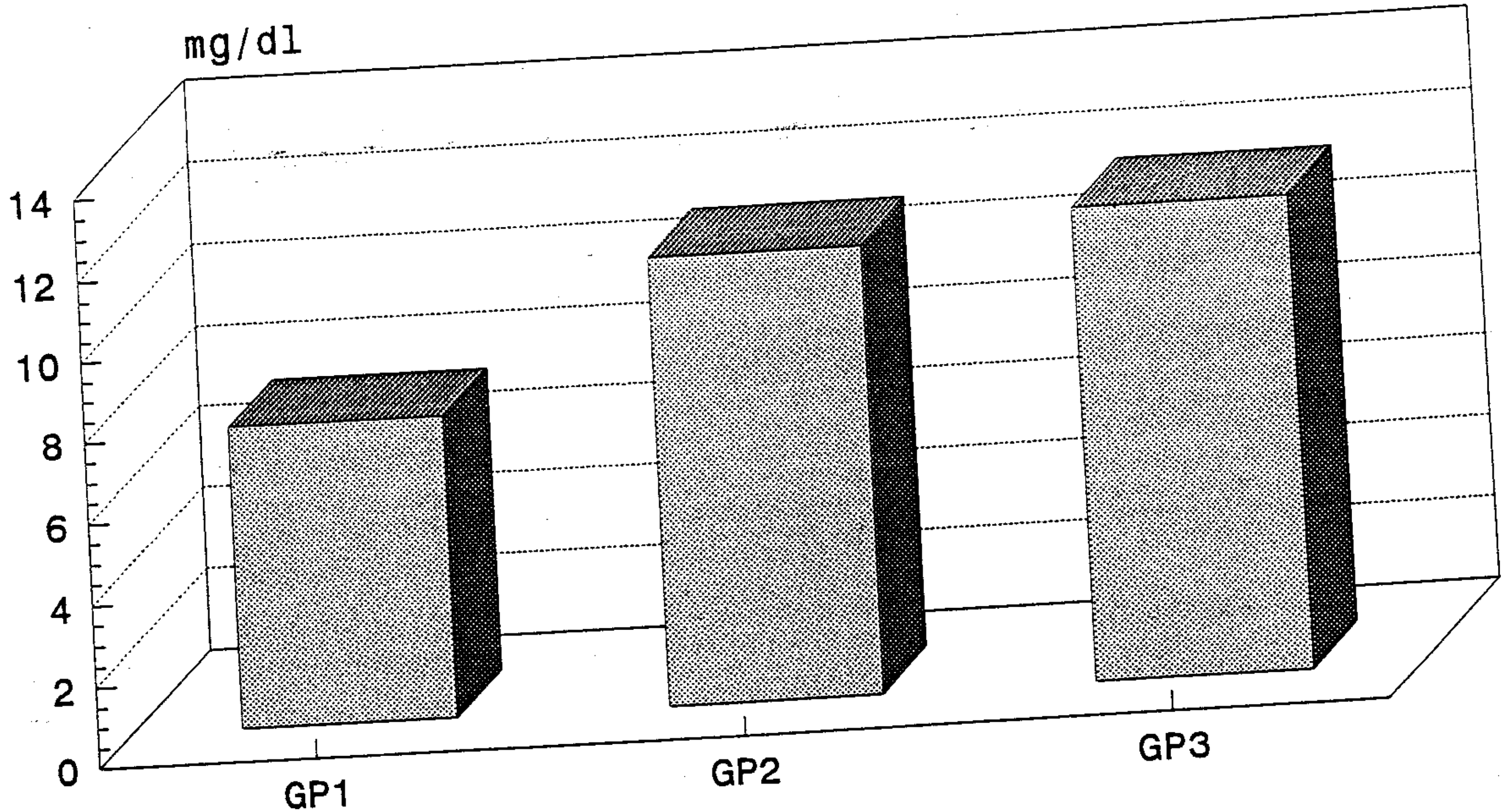

Fig(4) Mean height of the three studied groups.



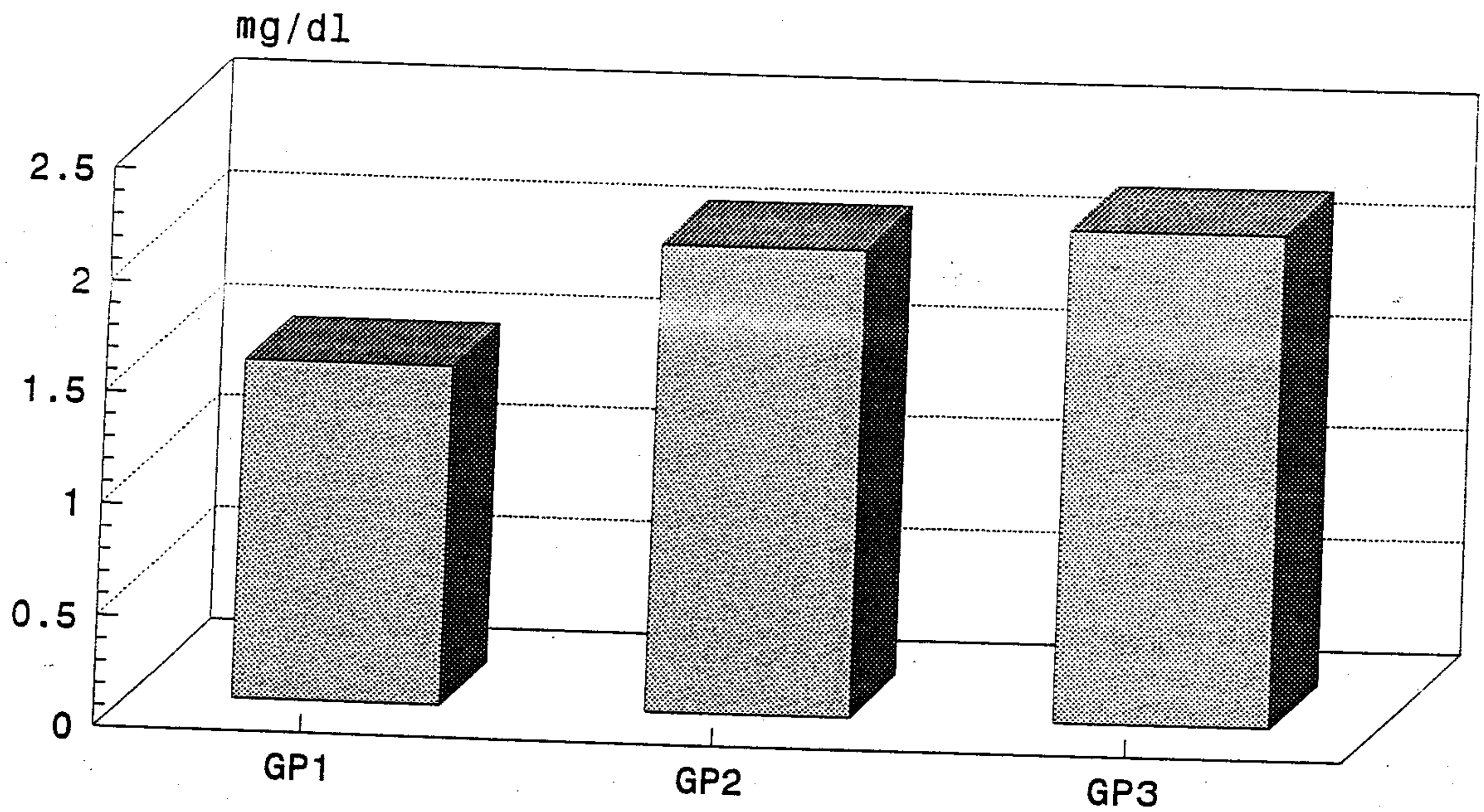
Fig(5) Mean head circumference of the three studied groups.




Fig(6) Mean mid arm circumference of the three studied groups.




Fig(7) Mean calcium level of the three studied groups.




Fig(8) Mean magnesium level of the three studied groups.

Fetal growth and energetic depend strongly on exchange of nutrients across the placenta ,which is also the site of metabolic activity and hormonal production .Disorders in mineral element nutrition and metabolism in embryos are potentially mutagenic and teratogenic and may lead to abortion or a wide variety of malformations . Similarly ,mineral element disorders later in fetal life may produce growth retardation and various abnormalities .Other effect may be latent and be expressed much later in life in the form of neurological and psychological disorders ,carcinogenesis ,atherogenesis and even teratogenesis in the subsequent generation .***(Speich et al ., 1992 )***

Calcium is important for skeleton development and fetal mineralization so fetal calcium level share in formation of fetal birth size. It influences the permeability of cellular membranes ,release of neurochemical transmitters and enzymes . It also influences the synthesis , secretion and metabolic effect of protein hormone .

92% of the fetal calcium is of materna dietaryl origin. There is active placental transport of calcium from mother to fetus against a concentration gradient . In last trimester maternal fetal Ca transfer approximate 100 : 150 mg/kg of fetal weight / day. Serum total Ca concentration increases from 5.5 mg/dl in second trimester to approximately 11 mg / dl at term .
So premature infants have lower serum Ca level than term infants .

***Gittleman et al .,1975*** found significantly lower serum calcium levels in infant delivered by C S and in premature infants in comparison to fullterm infants delivered vaginally . They also found a significant correlation (r =0.247 $p<0.01$) between birth weight and neonatal calcium concentration in serum in the first day of life but did not measure cord blood calcium level .

Similarlly , ***Bruck and Weintraub , 1985*** found significantly lower serum calcium concentration in premature neonates than in fullterm infants .

***Bogden et al ., 1990*** found a higher correlation ( r = 0.42 , p < 0.001 ) between birth weight and cord blood calcium level .

***Inderjit et al ., 1990*** found a significant difference between the normal birth weight group and the low birth weight group for cord plasma calcium concentration.

***Speich et al ., 1992*** found that there was no significant sex related difference at birth for calcium blood level .

***Bazowska and Jendryczko , 1995*** found that the height of neonates positively correlated with calcium in cord plasma and there is no significant difference between male and female for calcium level .

In our study there was significant difference in premature and fullterm for plasma calcium level in cord blood .

There was positive good correlation between calcium level and anthropometric measurements ( weight , length , head circumference and midarm circumference ).

There was no significant sex related or mode of delivery related differences at birth for plasma calcium level.

Magnesium is necessary for development of fetal skeleton which has about half of the total body Mg, the remainder being almost equally distributed between muscle and non muscular soft tissues . Serum Mg level is lower in infants who are small birth size ( small for gestational age, premature) ***( Geven et al., 1990 )***

It is an essential activator of 300 different enzymes and required for glucose utilization , fat , nucleic acid and protein synthesis . Magnesium is important for cell membrane permeability , neuromuscular excitability and muscle contraction . Magnesium is actively transferred across the placenta . ***( Schaw et al .,1990 )***

***Jukarainen , 1980*** found that magnesium level was lower in premature than in mature infants and found a significant incidence of hypomagnesemia throughout the first 5 days of life in neonates of gestational age less than 35 weeks .

***Dogden et al ., 1990*** found no significant difference in whole blood magnesium concentration between low birth weight and normal birth weight for blood level .

***Mameesh et al ., 1985*** has found no relation of magnesium level with infants birth size .

***Inderjit et al ., 1990*** also found no significant relationship between birth weight and plasma magnesium level .

***Speich et al ., 1992*** found there was significant correlation between birth weight and magnesium level .

***Husain and Siblet, 1993*** do not prove the use of Mg in prevention of preterm labor or its effects on birth size .

***Ghebremeskel et al ., 1994*** found no association of magnesium level with any of the anthropometric measurements , although magnesium showed an increasing trend with birth weight .

***Bazowska and Jendryczko , 1995*** found no difference of magnesium level according to sex difference and found that birth weight positively correlated with magnesium level .

***Ariceta et al ., 1995*** has found that very premature infants had significantly higher magnesium value than mature newborn infants . So plasma magnesium level related inversely to postconceptional age , weight and plasma calcium .

***Scott et al .,1984 and Wandrup et al .,1988*** have found highly positive significant correlation between calcium and magnesium but this was in contrast to the data given by ***Nelson et al ., 1987*** .

***Louis and Anast , 1990*** have found a positive correlation between plasma levels of calcium and magnesium .

In our study , there was significantly positive correlation between magnesium plasma level with gestational age and anthropometric measurements .

There was good relation between levels of calcium and magnesium in plasma of the cord blood .This means that the metabolism of magnesium and calcium are mutually dependent . This is through interfering of magnesium with normal PTH function at target organs and impairing secretion and / or synthesis of the hormone .

There was no difference of magnesium level according to sex difference and mode of delivery .

Normal iron metabolism is essential to maintain homeostasis of hematopoietic system as well as multiple metabolic processes .Iron is the main component of hemoglobin . It has a major role in erythropoiesis during fetal development . It enters as essential cofactor to basic metabolic oxidation reduction reactions and is required for cellular growth and multiplication through role in DNA synthesis . In the fetus the ratio of iron to body weight remain relatively constant throughout the pregnancy . So Fe level is lower in low birth weight infants than in normal infants. Through the transferrin receptor rich placenta , iron taken up rapidly, passed on to fetal transferrin and deposited in fetal tissues .

***Evers , 1975*** has firstly found an increased incidence of low birth weight in iron deficient pregnant women .

***Wintrobe , 1985*** suggest that there was little if any correlation between the level of cord blood hemoglobin and birth weight , therefore the cord whole blood iron levels correlated with birth weight .

***Bogden et al ., 1990*** found that in low birth weight group , cord blood iron levels were lower than in normal birth weight group .

***Inderjit et al ., 1990*** has found that for both low birth weight and control groups , the cord plasma iron concentrations are very similar.

***Pop-Jordanova and Bogdanova , 1992*** have found that correlation coefficient ( r ) between gestational age / Fe = 0.23 & p 0.03 , there was negative correlation and

( r ) for birth weight /Fe = 0.24 & p 0.03 , also there was negative correlation .

***Gaspar et al ., 1993*** found that iron consumption during pregancy was a signficant predicator of fullterm ( 37 weeks or more ) , neonatal weight and length . Consumption of one or more tablets ferrous sulphate per week by pregnant women was associated with increases neonatal weight by 172 g. and length by 1cm on average .

In our study , there was significant difference of plasma iron level of cord samples for premature and fullterm babies .

There was significant positive correlation of plasma iron and anthropometric measurements .

There was no difference of iron level according to sex difference and mode of delivery .

**The present study shows serum level of the cord blood of Ca 10.29+1.93(mg/dl) , of Mg 1.97+0.409 (mg/dl) and of Fe 191.92+ 55.31 (mg/dl). These** values **are approximately similar to the corresponding values found by *Micheal , (1996)*** ( Ca 7-12 mg/dl, **Mg** 1.3-2 mg/dl **and** Fe 100-250 μg/dl )