

Insulin and weight gain are related to serum leptin concentration in gestational diabetes mellitus

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Introduction

- ◇ Serum leptin concentrations are elevated in normal pregnancy.
- ◇ There is a positive correlation between serum leptin and insulin concentrations in obese and non-obese subjects, and in pregnancy.
- ◇ Hyperinsulinaemia and insulin resistance are metabolic features of normal pregnancy, but gestational diabetes (GDM) is associated with impaired insulin secretion .

Aims

We investigated serum leptin, insulin and insulin resistance in pregnancy, both in normal women and those with GDM .

Materials and methods

Materials :_

twenty women with GDM, aged 32 (5.1) years [mean (SD)] with a mean body mass index and pregnancy (BMI) 30.8 (5.1) Kg/m² duration of 27.7(3.5) weeks and 40 pregnant women with normal glucose balance, aged 30.9 (4.9) years with BMI 30 (6.1) Kg/m² (p = NS) and pregnancy duration of 26.6(4.5) weeks were studied.

Methods

- Cholestrol and Glucose: were measured using oxidased method (Kone instrument, Finland)
- Fasting serum leptin was measured by radioimmunoassay (Linco Research Mo, Liouis).
- Fasting serum insulin: Medgenix INS-ELISA is a solid phas enzume amplified sensitivity immunoassay (Biosource).
- Triglycerides: Lipase (Kone instrument, Finland)

Statistical method

Leptin concentrations were not normally distributed and were therefore logarithmically transformed to normalise the data.

All univariate analysis by unpaired 2-test. SPSS program have been used.

Result:- 1

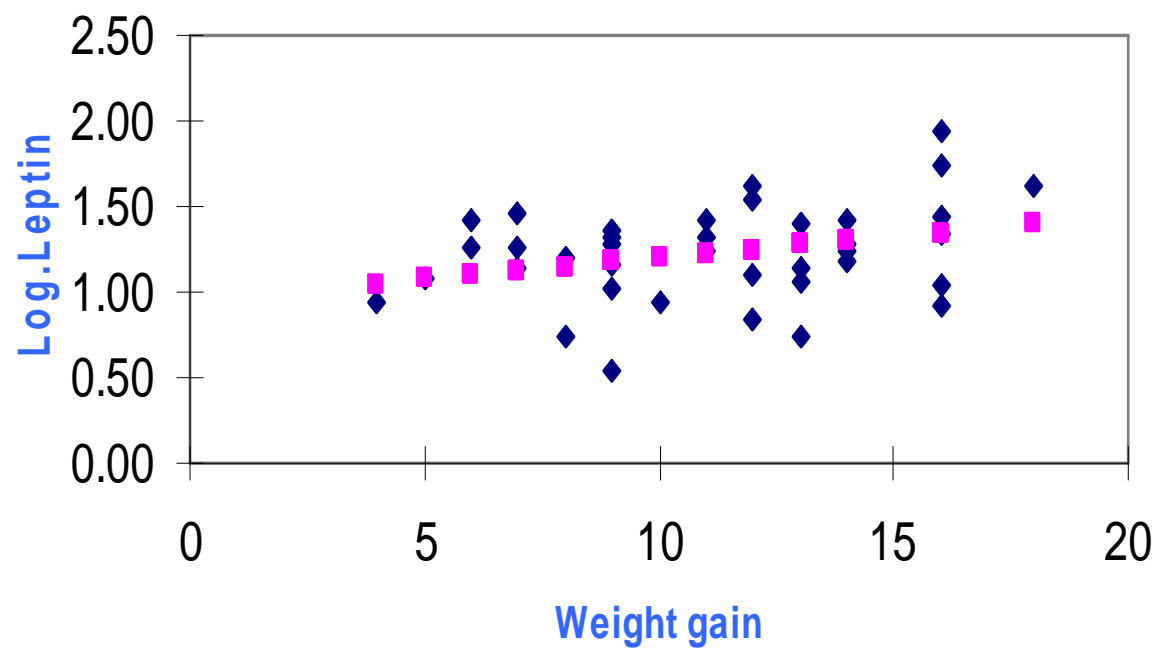
1- Leptin concentrations were significantly lower in GDM patients [13.2(2.7-21.9) ng/mL median (range)] than controls [19.1(3.5-87.0)ng/mL median (range) p<0.0001].

	Control	Diabetic
Body weight (kg)	3.74(0.46)	3.8(0.57)
Leptin (ng/ml)	19.1(3.5-80.0)	13.2(2.7-21.8)*
F. Glucose (mmol/l)	3.9(1.1)	5.4(1.3)**
2 hr glucose (mmol/l)	5.1(1.1)	9.2(1.2)**
Insulin (Iu/L)	8.9(5.5)	15.8(8.47)*
Weight gain (Kg)	11.05(3.7)	13.1(3.6)

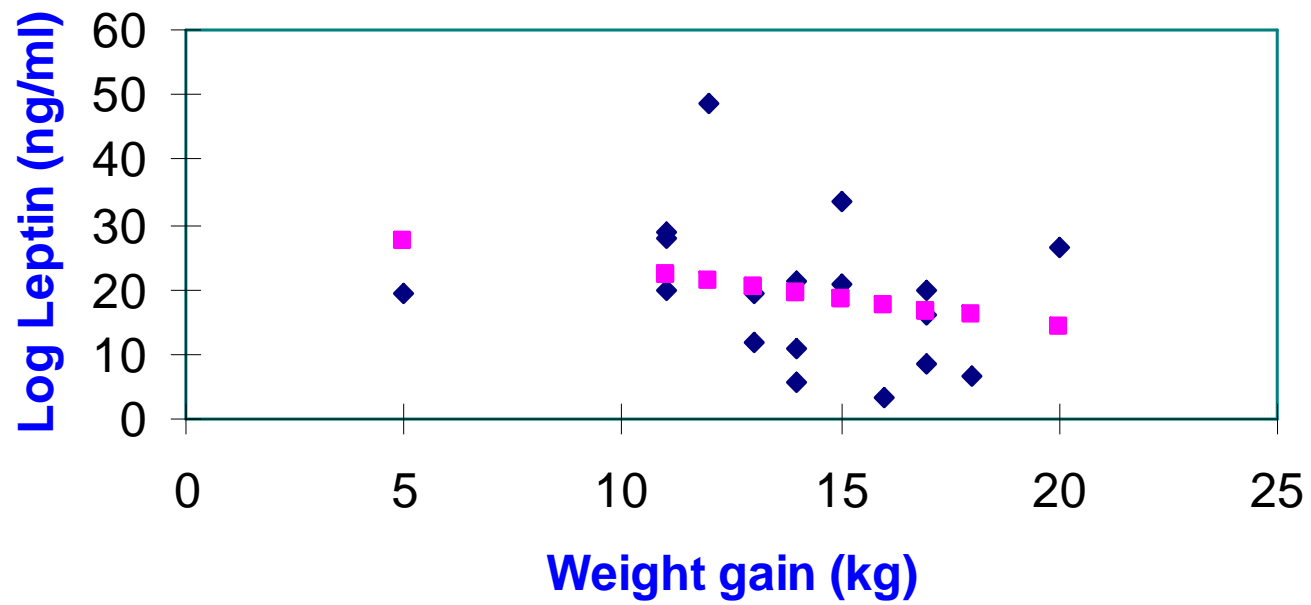
Result:- 2

2- Multiple regression analysis showed that • maternal weight gain ($p < 0.02$), insulin concentration ($p < 0.018$) and duration of pregnancy ($p = 0.04$) were all significantly related to the logarithm of the serum leptin

Log Leptin V Weight gain(NORM)



Log leptin V Weight gain (GDM)



Result:- 3

There was no difference in the baby's weight between GDM [3.9(0.57)Kg] and control mother [3.7(0.46)kg], but Maternal weight gain was significantly higher in GDM mothers [13.1(3.6) vs. 11.1(3.7)Kg, $p < 0.006$].

Discussion

The present study showed that serum leptin • concentration is lower in GDM than controls and this result is in agreement with these reported by Fest et al.

Pregnancy is a state of physiological insulin resistance and GDM develops if insulin fails to maintain glucose homeostasis.

Normally insulin has a slow and indirect effect on leptin release through a long –term trophic effect on adipocytes

It would appear that the insulin resistance associated with GDM result in reduced leptin secretion.

Our data also suggest that there may be a relationship between reduced leptin and weight gain in these women.

Conclusions

Hypoleptinaemia is involved with increase weight gain in pregnancy and associated with higher serum insulin, It is role in pathophysiology of GDM needs farther investigator