PATTERN OF WEIGHT GAIN IN NORMAL PREGNANCY AND IT'S USEFULNESS FOR MONITORING ANTENATAL PATIENTS

by

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SUMMARY

Pattern of weight gain has been established from their centile value in 100 antenatal patients having normal pregnancy, by longitudinal study.

Such normal pattern should be routinely used to monitor all antenaal patients from their weight record, both in urban as well rural area to detect and pick-up cases going for I.U.G.R., pre-eclampsia, multiple pregnancy hydramnios etc.

To monitor antenatal patient from her weight record is simple and quite informative method. It can be taught to paramedical workers and requires minimum cost.

It is an important tool to reduce maternal and perinatal hazard.

Introduction

Considering that our 80% of population lives in villages, where the facility for Primary Health Care is very scarce and skilled persons remaining and practicing in cities or towns, the antenatal care is mostly left to our traditional Auxillary Nurse Midwife. So, for better antenatal care to identify a patient at high risk, we should have some methods by which paramedical personnel can give antenatal care, pick up abnormality, and refer such cases to the institution, where facility for better antenatal, intranatal and newborn care is available.

By keeping this objective in mind an attempt was made to establish "Pattern of Weight Gain during normal pregnancy" by longitudinal study.

Also to prove its usefulness, on this weight gain pattern of normal pregnancy, an attempt was made to monitor weight gain pattern of abnormal groups e.g. pre-eclampsia, intrauterine growth retardation, multiple pregnancy, hydramnios, etc. In each group, weight gain pattern of individual case was plotted against normal pattern.

Monitoring of an antenatal patient by measuring her weight regularly and plotting gain of weight against normal pattern is simple, low cost method. It does help in selecting abnormal cases.

Method is simple one and can be taught to paramedical workers involved in providing antenatal care.

Material and Method

This is a longitudinal study of antenatal patients, attending Obstetric Outdoor Department of Civil Hospital, Ahmedabad from April, 1982 to April, 1984. Out of 250 patients registered for this study by random selection, 150 patients completed the study. Analysis of these 150 patients will be presented here.

All the patients were from low socioeconomic group, having average income of Rs. 300 per month. All were housewives. No special instructions were given for extra diet. From each patient, routine antenatal history was asked and they were submitted for routine examination and investigations. Those patients who were knowing their last menstrual period were taken for study. Each patient was weighed on the standard weighing machine.

All the mothers were followed up till their delivery and first week after it. Baby's birth weight was noted and any hazard in first week of life was also noted.

Observations

Out of 150 cases, 100 patients had normal pregnancy having normal obstetric outcome, i.e. healthy child. Twenty patients developed pre-eclampsia 17 gave birth to growth retarded babies, 6 had twins, 5 had hydramnios and 2 delivered prematurely.

For establishing pattern of weight gain during normal pregnancy, detail study of 100 cases was carried out as follow:

TABLE I

Average Total Weight Gain in Normal Pregnancy

No. of Patients	Range of weight gain in kg.	Average total weight gain in kg.	Standard deviation
100	4.5 to 11.25	8.12	± 1.2

Table I shows average total weight gain of 100 normal cases. It was 8.0 kg. (± 1.2 SD).

TABLE II

Trimester-wise Average Total Weight Gain During Normal Pregnancy

No. of patients	Average Weight-Gain in Kg.		
	Trimester I	Trimester II	Trimester III
100	0.6	4.94	2.58

Table II shows trimester wise average weight gain of patients having normal pregnancy. Average weight gain was 0.6 kg. in first trimester, 4.94 kg. in second trimester and 2.58 kg. in third trimester.

Table III shows average weight gain at interval of 4 weeks in patients having normal pregnancy.

TABLE III

Breakdown of Average Weight Gain at 4 Weekly interval (in Normal Pregnancy)

Total No. of Patients	Average Weight Gain in Kg. at 4 weekly interval						
	12-16	16-20	20-25	24-28	28-32	32-36	36-40
100	1.0	1.42	1.40	1.0	1.0	0.96	0.64

Graph I shows weight gain pattern of 100 cases, in centile value. Midline of the graph represents 50th centile value, while lower and upper linings show 5th and 95th centile value respectively. So the graph represents a path for weight gain pattern of a patient, progressing as a normal patient during antenatal period.

To prove usefulness of this graph, on the same graph, individual cases of each abnormal group were plotted for their weight gain pattern and subsequent graphs represent each group separately.

Graph II shows pattern of weight gain of all 20 cases having pre-eclampsia against the pattern of weight gain of cases having normal pregnancy. It is seen that patients developing toxaemia gain much faster in shorter period. So if any antenatal patient is monitered for her weight gain against the chart having normal pattern, a case likely to develop toxaemia can be diagnosed earlier and thus subsequent hazards to mother and foetus can be reduced by proper care.
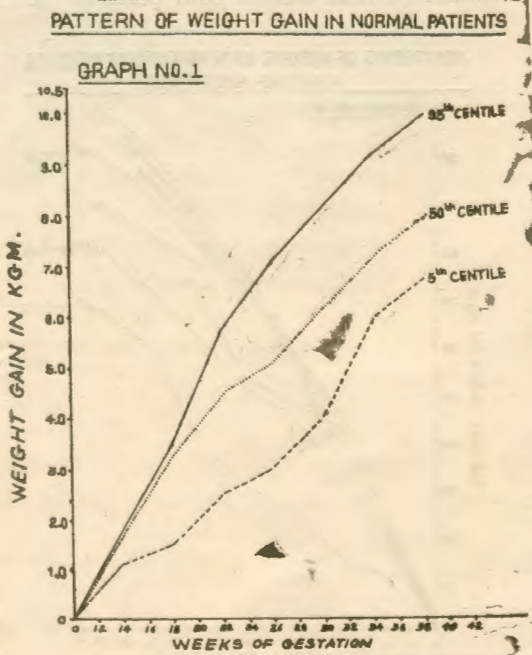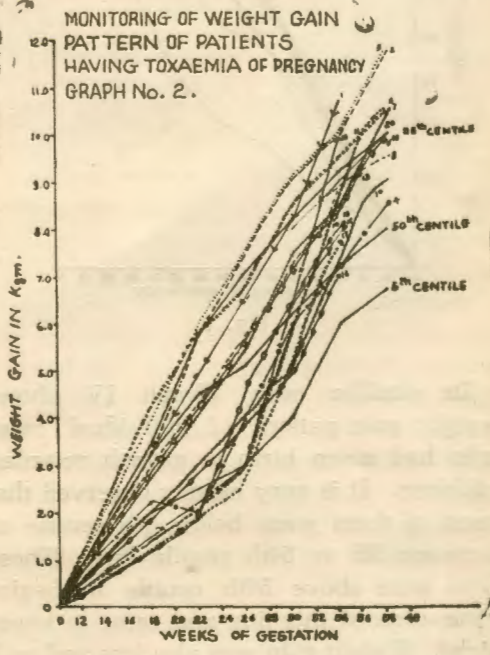

Fig. 1

Fig. 2

Graph III shows pattern of weight gain of each case of twins and it is plotted against chart having pattern of weight gain of normal pregnancy cases. Most of the cases remained between the path of 50th centile to 95th centile from begining, then crossed the line of 95th centle and all gained weight much higher than normal pregnant women. Thus prediction of multiple pregnancy is also possible by monitoring weight gain pattern.
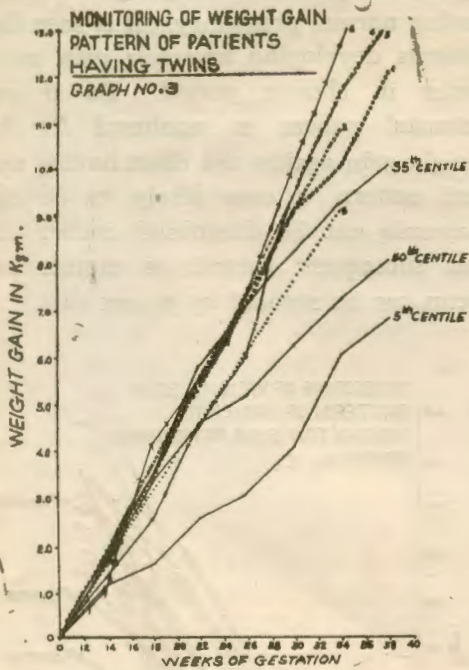
MONITORING OF WEIGHT GAIN PATTERN OF PATIENTS HAVING IUGR
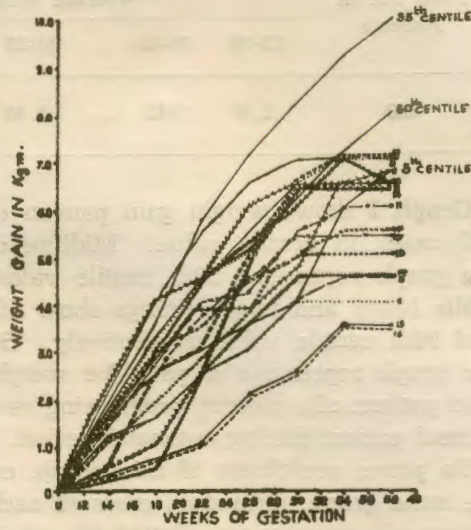
GRAPH No. 4

Fig. 4

This graph shows pattern of weight gain of 5 cases of hydramnios, plotted against normal weight gain pattern. This

MONITORING OF WEIGHT GAIN PATTERN OF PATIENTS HAVING TWINS

GRAPH NO. 3

Fig. 3

In simillar way, Graph IV shows weight gain pattern of individual cases who had given birth to growth retarded children. It is very clearly observed that most of them were below 5th centile or between 5th to 50th centile line. These who were above 50th centile in begin-ning, crossed this line and came to lower level. Weight gain was also less and took longer time.

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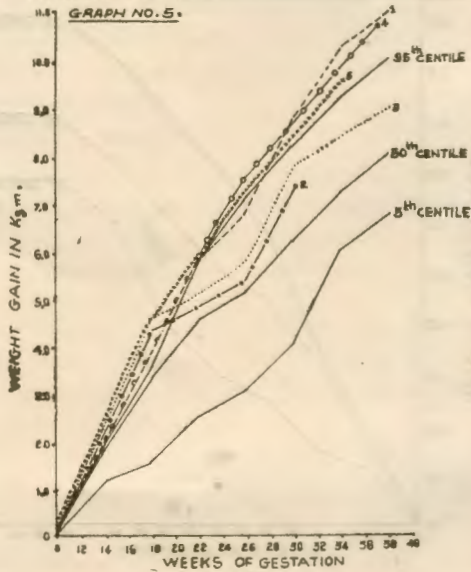
GRAPH NO. 5.

Fig. 5

shows that even though fundal height is much more in hydramnios, weight gain is not that much proportionately higher. Weight gain remains between 50th to 95th centile lines or little more. Hydramniotic cases are associated with congenital abnormality and so cases where fundal height is much more should be referred for ultrasonic screening to detect type of congenital abnormality.

Graph VI shows weight gain pattern of 2 cases who had premature deliveries. Nothing can be predicted when compared with normal pattern, about going for premature delivery. Number of cases were only 2.

Table IV shows total average weight gain in different types of cases. Compared to 8.12 kg. in normal cases, it was only 5.6 kg. in patients having intra-uterine growth retardation, while it was more in pre-eclampsia i.e. 10.36 kg. and highest in multiple pregnanry i.e. 12.16 kg.

MONITORING OF WEIGHT GAIN PATTERN OF
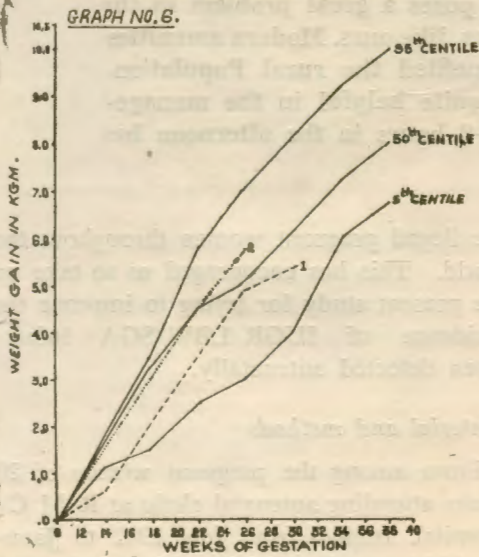PATIENTS HAVING PREMATURE DELIVERY

Fig. 5

TABLE IV

Average total Weight Gain in Kg. in Different Types

Type of case	Average total Weight Gain in kg.
Normal	8.12
Pre-eclampsia	10.36
Twins	12.16
I.U.G.R.	5.60
Hydramnios	8.30
Prematurity	4.8