ANTENATAL ASSESSMENT OF FETAL WEIGHT BY DAWN'S FORMULA

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SUMMARY

A clinical study of Antenatal assessment of foetal weight by Dawn's formula is presented here. Total eighty cases were studied with all vertex presentation and Double abdominal wall thickness less than 3 cm. Range of error in estimating the birth weight antenatally with actual postnatal birth weight varied from 14 gms to 280 gms with a mean of 155.04 gms. Percentage of error was 5.84.

Introduction

Birth weight of newborn babies varies from child to child, 2.5-3.5 kg being considered normal. A large number of physiological and pathological conditions like parity, weight of the mother, pregnancy complications and socioeconomic standards are responsible for a change from the normal.

Estimation of the fetal weight in utero is an important method for predicting intra uterine growth retardation (I.U.G.R.). A valuable adjunct to diagnosis of fetal weight in utero in modern obstetrics is ultrasound. However, no scientific technological advances can replace the simple method of clinical palpation on which we entirely depend at present.

As a supplimentary method, a study was carried out to determine the fetal weight in utero by simple non-invasive technique using Dawn's formula.

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Material and Methods

A clinical study of antenatal assessment of fetal weight in utero using Dawn's formula was carried out in the Department of Obstetrics and Gynaecology, Assam Medical College, Dibrugarh, starting from 1st August, 1985 to 1st January, 1986. Total 80 cases were studied all with vertex presentation and double abdominal wall thickness as measured with calipers within 3 cm. Birth weight estimation was restricted to those patients in the antenatal ward who went into labour within 3 days of assessment of fetal weight.

Dawn (1981) calculated fetal weight by determining uterine volume in millilitre by a formula, 1.36 x length of fundus from upper border of symphysis pubis as measured abdominally by external pelvimeter in centimeter x $(\frac{1}{2}\ T)^2$; T = maximum transverse diameter of gravid uterus below fundus in cm. Fundal height is measured by palpation and the point is marked by a ball pen. The maximum transverse diameter is measured by placing the external pelvimeter points at

the furthest point apart on the lateral wall of the gravid uterus.

Taking 1 ml uterine volume delivering 1.06 gm fetal weight at 38 weeks (as observed), the formula comes to 1.36 x L x (½ T)² x 1.06 = Fetal weight in gms; 1.36 when multiplied with 1.06 comes to 1.44. Thus, the formula comes at L x (½ T)² x 1.44 = Fetal weight in gms. This formula is applicable when double abdominal wall thickness (DAWT) is 3 cm or less for maternal weight upto 50 kg. Formula is applicable only when fetal vertex presents at the lower pole of the uterus.

Correction of uterine measures: In case the woman is obese, half of the excess DAWT over 3 cm is deducted from L while total excess over 3 cm is deducted from transverse diameter (T). Following this correction formula is calculated. The formula can predict fetal weight in gms in late pregnancy with an average error of 10 percent in Dawn's own study.

Results and Observation

Results of the clinical study is presented below.

TABLE I

	Range	Mean	Error		
			Range	Mean	Percentage
Estimated weight of babies before birth	1010 – 3394 gms.	2653.9 gms.			
Weight of babies at birth	1750 – 3600 gms.	2594.3 gms.	14 to 280 gms.	155 04 gms.	5.84

Conclusion

The antenatal diagnosis of IUGR is still a frustating problem for Obstetricians. IUGR is associated with an increase in perinatal mortality and morbidity and even if the baby survives it causes a host of morbid conditions. Prenatal diagnosis of this condition by estimating the fetal weight gives opportunity to decrease this perinatal mortality and morbidity. Dawn's formula certainly has a place in Obstetrics in developing countries as an ancillary tool to other clinical methods of evaluation of fetal weight.

References

1. Dawn, C. S. (1982 Text Book of Obstetrics (8th Ed.) Silver Jubilee) pp. 83. Dawn Books.