EVALUATION OF A RISK APPROACH BASED SCORING SYSTEM & U. S. G. IN PREDICTION OF I. U. G. R.

USHA MOTWANI ● PANKAJ DESAI ● MAYA HAZRA

SUMMARY

In this prospective study, Wennergreen's comprehensive clinical system was used and evaluated for prediction of I. U. G. R. It was found that it had a sensitivity of 74.5%, but a specificity of 92.4%. When the same was coupled with U. S. G. the prediction frequency rose marginally but not significantly. Thus this system could be used to predict nearly 75% cases of IUGR and thus wherever possible prevent it.

INTRODUCTION

IUGR - intrauterine growth retardation or 'runting' of fetal growth has gained attention of obstetricians for last 40 yrs. Poor perinatal outcome has been a matter of great concern for them. Early detection and/or prediction that a particular pregnancy is likely to result in I. U. G. R. has thus been of significant interest as this can help in managing the high risk situation more energetically and as far as possible prevent adverse outcomes.

In last decade the emphasis has thus shifted to this risk approach in prediction of IUGR. Wennergreen (1982) has forwarded a scoring system with emphasis on the risk approach. This system has been devised to detect mothers who are at maximum risk of giving birth to an IUGR infant. The essence of this system is its purely clinical parameters.

Ultrasonography based on different parameters like liquor volume, BPD etc. also helps in prediction of IUGR with its known limitation (Campbell - 1977, Sabhaga - 1978).

In this study the accuracy of the scoring system alone and then in combination with serial USG is used to evaluate their efficacy in prediction of IUGR.

MATERIAL AND METHODS

This is a prospective study carried out in the Dept. of Obst. & Gynec., Medical College and SSG Hospital, Baroda over a period of one year from 1st Feb. 1991 to 31st

Dept. of Obst. & Gyn. Medical College & SSG Hospital, Baroda.

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Jan. 1992. During this study period randomly selected patients based on the following criteria were selected for the study :

1) At enrollment for the study the gestational age should be less than 24 wks. of gestation.
2) Singleton pregnancy.
3) Longitudinal lie.

After completing the relevant history and clinical examination, these cases were subjected to Wennergreen's scoring system, detailed in Table I.

It was accepted that the history of previous low birth weight or IUGR is based on technical recall by the patient and was thus included only in discharge papers or similar documentary evidence was forthcoming.

All these cases were subjected to serial ultrasonography. First scan was carried out at 20 to 24 wks. The parameters concentrated upon were Biparietal diameter (BPD), Femur length (FL), Head circumference, abdominal circumference, placental grading and amniotic fluid pockets. These findings of each case were plotted on a graph based on the study of normograms for Indian women (Rajan et al 1991). The second scan was carried out between 31 to 33 wks. of gestation and the same parameter reassessed and plotted. The final scan was done at 35 to 37 weeks on similar lines. From the plotted parameters following was deduced :

(a) Falling growth potential but not below the 10th percentile.
(b) Growth below the 10th percentile were labelled as IUGR.

All enrolled cases were followed up, upto birth. Keeping postnatal diagnosis of IUGR as the gold standard, the sensitivity, specificity, predictive value of both the systems for prediction of IUGR determined.

RESULTS

As shown in this table nearly 75% patients with score more than or equal to 4

Table I

Wennergreen's Scoring System

Sr. No.	Variable	Score	Remarks
1.	B.P. 140/90 mm	1	- Patients with total score
2.	H/O smoking daily irrespective of the number of beedis / cigarettes	2	less than 4 :- Prediction : No IUGR
3.	H/O previous S.B./N.N.D./LBW/IUGR	1	- Patient with total score
4.	H/O repeated UTI in present or past	1	more than or equal to 4 :-
5.	Bleeding or uterine contractions.	1	Prediction : IUGR
6.	Static Fundal Height less or equal to to 25 cms.	3	
7.	Static Abdominal girth	1	
8.	Insufficient wt. gain	1	

had IUGR. It should however be noted that of these patients with score more than or equal to 4 25.5% did not have IUGR. Also about 10% of cases with score less than 4 had IUGR. This brings one to the points of consideration of the effectivity of this scoring system, as shown in Table III.

Though Weenergreen reported a sensitivity and positive predictive value of 90%, in the present study the same was found to be 74.5%. However, specificity and negative predictive value of both the series remain comparable.

As shown in this table, with scores more than 6 this scoring system becomes most accurate in prediction of IUGR.

When those cases who had score more than or equal to 4 and were thus likely to have an IUGR, were subjected to USG the results were as shown in Table V.

As shown in this table USG could not increase the prediction of IUGR significantly. Thus putting across the board with these two systems, around 20% to 25% of cases of IUGR can still not be predicted or diagnosed early.

DISCUSSION

Prediction and early diagnosis of IUGR was the main aim of this study. Wennergreen's scoring system (1982) due to its purely clinical configuration was selected for the aim. It was found that when a case tends to have a score more than or equal to 4, her chances of developing IUGR are high. Extrapolating this result prospectively

Table II

Score & Results

Score	Predicted IUGR	Actual IUGR		Actual Non IUGR		Predicted Non IUGR
		No.	%	No.	%	
More than or equal to 4	51	38	74.5	13	25.5	00
Less than 4	00	16	9.24	157	90.76	173

Table III

Effective of Scoring System

Criteria	As reported by Wennergreen (%)	As found in Present Study (%)
Sensitivity	90.0	74.5
Specificity	95.5	92.4
Positive Predictive value	90.0	74.5
Negative Predictive value	90.0	90.76

Table IV

Relation of increasing score to IUGR

Score	Predicted IUGR	Observed IUGR		Observed Non IUGR	
		No.	%	No.	%
4	13	05	38.46	08	61.54
5	11	08	72.72	03	27.28
6	11	09	81.81	02	18.19
7	09	09	100.00	00	00.00
8	08	08	100.00	00	00.00

Table V

Predictive value of Scoring System & USG

Predictor	Predicted IUGR	Observed IUGR		Observed Non IUGR	
		No.	%	No.	%
Score	51	38	74.5	13	25.5
U. S. G.	51	41	80.39	10	19.67

At df. 2, X^2 value was 0.228 which was statistically NOT significant

then, if a mother who has come for ANC is to score more than 4 by this study her changes of developing IUGR are indeed high. Gennser Person (1982) using similar scoring system could find that such scoring systems have a low sensitivity (57%) whereas they found it to have a 99.5% specificity. However, in the present study the sensitivity was found to be distinctly higher.

Many workers (Campbell - '75, Verma - '79, Hadlock R. et al - '84) have used USG for detecting IUGR. In the present study a comprehensive clinical profile has been coupled by USG and we found that the difference in early diagnosis of IUGR was not significantly higher by both the methods, on using the standard X^2 tests for statistical analysis.

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