Detection of the "small for gestational age" fetus: comparison of a teaching hospital with field clinics

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Abstract

Introduction Low birthweight babies make a disproportionate contribution to perinatal morbidity and mortality. Antenatally they manifest as "small for gestational age" fetuses. Their detection is an important aspect of antenatal care.

Objectives To compare the effectiveness of antenatal detection of "small for gestational age", fetuses by a clinic in a teaching hospital and field clinics.

Design Comparative descriptive study.

Setting Professorial Obstetric Unit of De Soysa Maternity Hospital, Colombo.

Methods Antenatal records of 67 consecutive women who delivered low birthweight babies at term were reviewed. Entries in the teaching hospital clinic records and the pregnancy record of the field clinics were studied. A deviation corresponding to more than two weeks' growth was considered significant. The period of gestation at which the deviation was first detected and any follow up action taken were noted.

Results Of the total sample of 67 women 56 had also attended a field clinic. A significantly greater percentage of small for dates fetuses were detected by the primary care staff (71.4 vs 53.7%; $p<0.05$). They also detected them earlier in pregnancy (26.4 vs 30.7 weeks; $p<0.05$). However, referral for specialised care was arranged only in 32% by the field clinics.

Conclusion The detection rate of small for gestational age fetuses by staff of field clinics was close to the higher rates quoted in the literature. Only a minority of these fetuses were assessed further in both settings indicating a deficiency in antenatal care.

Introduction

Low birth weight (less than 2500 g) and fetal growth restriction (FGR) are associated with a poor perinatal outcome (1,2,3). Low birth weight (LBW) babies born at term would almost invariably have had FGR.

In the antenatal period these babies would manifest as "small for gestational age" (SGA) fetuses. In recent years the ability to monitor them with ultrasound and Doppler studies, and thereby to decide on the optimal time for delivery, has improved outcome. The concern today is the failure to detect SGA fetuses for interventions to be effected (3).

SGA babies are detected clinically by assessment of uterine size by palpation (4) and by measurement of symphysiofundal height (SFH) using a tape. After 20 weeks, SFH in centimetres is said to correspond to the numerical value of the period of gestation in weeks (4). A variation of two centimetres above or below the value is acceptable (4). Ultrasound assessment, which is well recognised for its sensitivity and specificity (5), is not feasible for screening in the antenatal clinic. Clinical methods have been shown to have a sensitivity of 50 to 80% in predicting growth restriction (6,7,8). A SFH chart derived from a community based study (9) is available in the pregnancy record issued by field clinics. In an unpublished study we found this chart's sensitivity to be very low for prediction of LBW babies.

In Sri Lanka, sources of antenatal care include field clinics conducted by the Medical Officer of Health (MOH), and clinics of the Teaching Hospitals. Women are free to choose either for their antenatal care. In the field clinics they are usually seen either by the MOH or rarely by a Public Health Nursing Sister. Doctors, varying from intern house officers to specialist obstetricians provide care in the Teaching Hospitals. In the hospital studied, women were seen by a Registrar at their booking visit and thereafter by an intern or senior house officers until they reached 36 weeks gestation. From that point onwards they were seen by a specialist obstetrician.

It is common for women to attend the clinics of teaching hospitals in the hope of receiving better care and ensuring admission to the unit of their choice. The average doctor: mother ratio in the teaching hospital clinic is 1: 65. A ratio for field clinics is not available.

Objective

The objective of this study was to compare detection of SGA babies in the antenatal clinic in a teaching hospital with that of the field clinics.

Setting

Professorial Obstetric Unit of De Soysa Maternity Hospital, Colombo.

Methods

In a pilot study we found that the detection rates for the field clinics was 70% and for the teaching hospital

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clinic 40%. Using these figures, sample size was calculated using standard formulae aiming for a power of 90% and a statistical significance of 5% (10). Antenatal records of 67 consecutive women who delivered low birthweight babies at term were reviewed. Entries in the tertiary care clinic record and the pregnancy record were studied. Women with multiple gestations, unsure dates and intrauterine death were excluded.

A reduction corresponding to more than two weeks' growth was considered significant for the purpose of this study. Whenever such a reduction was noted, the period of gestation at first detection and any follow up action arranged were noted. These actions were referral for a specialist opinion or ultrasound assessment. Each woman was asked whether a tape measure was used at any time in the assessment of the abdomen.

Data were analysed using the statistical package SPSS 10. Ethical approval for the project was obtained from the Ethical Review Committee of the Faculty of Medicine, Colombo.

Results

Of the 67 women, 56 had also attended a field clinic. Fifty (74.6%) of the women who had attended the tertiary care clinic had had their SFH measured using a tape a measure as compared to 41 (73.2%) of those who attended the local clinic. The SFH chart in the pregnancy record was not used for plotting measurements in any of the 56 women who attended primary care clinics.

The table shows detection of a disparity in growth in each setting. There was a significantly higher detection rate by the field clinic, and they also noted the deviation earlier. The number detected by them before term was also higher. These differences were statistically significant ($p<0.05$).

Table. Detection of disparity in growth

	Field clinics (n=56)	*Teaching hospital (n=67)*	
Number detected	40 (71.4%)	36 (53.7%)	P<0.05
Mean period of gestation at detection in weeks	26.5	30.7	P<0.05
Detection before term	37 (66%)	29 (43.3%)	P<0.05
Follow up action arranged	13 (32.5% of detections)	26 (72.2% of detections)	

The staff of the field clinic arranged for further evaluation of the detections only in 32.5%, whereas staff in the teaching hospital did so in 72%. Of the total number of women in each group, this represents 23.2% and 38.8% respectively.

SFH was measured using a tape measure in 51 (76.1%). Fifteen (22.3 %) women did not have such a measurement and 11 were unsure. In the women whose SFH was measured the detection rate was 58.8% compared to 33.3% when the measurement was made. The difference did not reach statistical significance although the detection rate was 25% higher with SFH measurement.

Discussion

SGA babies were detected in the field clinics in a greater proportion of women and at an earlier gestation than in the teaching hospital. This is contrary to what would have been expected given the expertise available in the latter. The differences in the rate and stage of detection between the two settings reached statistical significance ($p<0.05$). The detection rate by the field clinics (71.4%) was remarkable, since the highest rate of detection by clinical methods quoted in the literature is about 80% (8).

The mean difference of over 4 weeks in initial detection (26.5 weeks vs 30.7) is almost certainly clinically significant as well. Greater vigilance, more specialised assessments and interventions could be initiated on these fetuses at an earlier stage, and the woman and the family would have more time to prepare for the possibility of an early elective birth.

However, staff of the field clinics failed to arrange follow up action for over two thirds of the detections. This may have placed these fetuses in jeopardy.

There may be many reasons for this inaction. Firstly, there may be a lack of awareness of the seriousness of a fetal growth deviation. Secondly, there may be a reluctance to refer mothers to specialised institutions due to travel difficulties and other logistic problems involved. Finally, and perhaps most importantly, there is no standard in the form of a reliable SFH chart against which a measurement could be compared. There is an urgent need to develop a reliable SFH chart for Sri Lanka. Many studies have demonstrated that developing a SFH chart for a population significantly increases the detection rates of growth deviations (8,11,12,13).

The significantly lower detection rate for the teaching hospital is a cause for concern. Overall, only a minority of SGA babies received further assessment in both settings. This represents a deficiency in antenatal care, given the contribution of these fetuses to perinatal mortality and morbidity.

If the perinatal outcome of LBW babies in Sri Lanka is to be improved, antenatal care must be more focused towards their detection. The development of a reliable SFH chart for Sri Lanka is essential, protocol in antenatal care that includes standardised measurement of SFH should be adopted. Field clinics must refer SGA fetuses for further assessment.

References

1. Fonseka P, Wijewardene K, de Silva DG, Goonaratna C, Wijeyasiri WA. Neonatal and post-neonatal mortality in the Galle district. *Ceylon Medical Journal* 1994; **39**: 82-5.
2. Lucas GN, Ediriweera RC. Perinatal deaths at the Castle Street Hospital for Women in 1993. *Ceylon Medical Journal* 1996; **41**:10-2.
3. Baschat AA, Harman CR. Antenatal assessment of the growth restricted fetus. *Current Opinion in Obstetrics and Gynecology* 2001; **13**: 161-8.
4. Campbell S, Lees C, eds. Obstetrics by ten teachers. 17th ed. London: Arnold 2000: 6-10.
5. Chang TC, Robson SC, Boys RJ, Spencer JA. Prediction of the small for gestational age infant: which ultrasonic measurement is best? *Obstetrics and Gynecology*, 1992; **80**: 1030-8.
6. Mathai M, Jairaj P, Muthurathnam S. Screening for light-for-gestational age infants: a comparison of three simple measurements. *British Journal of Obstetrics and Gynaecology* 1987; **94**: 217-21.
7. Pearce JM, Campbell A. Comparison of symphysis-fundal height and ultrasound as screening tests for light-for-gestational age infants. *Australian and New Zealand Journal of Obstetrics and Gynaecology* 1985; **25**: 87-90.
8. Grover V, Usha R, Kalra S, Sachdeva S. Altered fetal growth: antenatal diagnosis by symphysis-fundal height in India and comparison with western charts. *International Journal Gynecology and Obstetrics* 1991; **35**: 231-4.
9. Wickremasuriya KP, Alahakone KS. Study of low birthweight and neonatal morbidity and mortality in Sri Lanka. Family Health Bureau, Ministry of Health of Sri Lanka, 1991.
10. Kirkwood BR. Essentials of medical statistics. First Edition. London: Blackwell Science, 1994: 191-200.
11. Thompson ML, et al. Predictive value of conditional centile charts for weight and fundal height in pregnancy in detecting light for gestational age births. *European Journal of Obstetrics, Gynecology and Reproductive Biology* 1997; **72**: 3-8.
12. Rai L, Kurien L, Kumar P. Symphysis-fundal height curve – a simple method for foetal growth assessment. *Journal of Postgraduate Medicine* 1995; **4**: 93-4.
13. Walraven GE, Mkanje RJ, van Dongen PW, van Roosmalen J, Dolmans WM. The development of a local symphysis-fundal height chart in a rural area of Tanzania. *European Journal of Obstetrics, Gynecology and Reproductive Biology* 1995; **60**: 149-52.