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Continued overleaf

Leading article

Detection of the small for gestational age fetus

A reliable SFH chart should be developed for Sri Lanka, and serial SFH measurements emphasised.

A fetus is generally considered to be small for gestational age (SGA) if its birth weight is below the 10th centile for its specific gestational age. The majority of SGA fetuses are constitutionally small and healthy, and when delivered at term do not carry any appreciable increased morbidity or mortality (1,2). Some of these fetuses however have had fetal growth restriction (FGR) and failed to achieve their full growth potential. They not only have a poor perinatal outcome (3,4) but also carry an increased risk of neonatal complications (5,6), impaired neurodevelopment (7), and possibly even type 2 diabetes mellitus and hypertension in adult life (8).

Over the years a great deal of research has been done to identify improved methods of early detection of FGR. Ultrasound biometry has become increasingly popular and serial measurement of growth velocity using fetal abdominal circumference, and estimated fetal weight have been found to be the best indices to predict FGR (9). It is important to note that only serial (not single) measurements can predict FGR and poor perinatal outcome (9,10). The reference chart used for ultrasound biometry should be based on longitudinal growth studies and not on cross sectional data (11,12).

Routine ultrasonography after 24 weeks gestation in low-risk pregnancy has not been useful in improving perinatal outcome (13). Even biophysical tests such as cardiotocography, amniotic fluid volume, biophysical scoring and ultrasound Doppler flow velocimetry have only a limited ability to detect FGR in low risk populations (14). Ultrasound and Doppler flow velocimetry is not freely available except in tertiary care centres. Hence it is important to detect the SGA fetus as early as possible clinically. This would enable further evaluation and monitoring of the fetuses to detect FGR.

Studies have suggested that up to 70% of SGA fetuses may not be detected by inspection and palpation of the abdomen alone (15,16). Although measurement of the symphysio-fundal height (SFH) was introduced more than three decades ago, the clinical value of this measurement has been questioned because of wide variation (17).

SFH measurements have specificities of up to 94% in the detection of SGA fetuses (18,19). Although these studies have reported sensitivities up to 84%, other large studies have shown sensitivities as low as 27% (20). The low sensitivity, high false positive rates and significant intra- and inter-observer

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variations make SFH *per se* an unreliable index for the detection of SGA fetuses (20,21,22), but in large low-risk populations it could be used as a screening test that should be supplemented with serial ultrasound biometry. It is often stated that the "SFH in centimetres (cm) should give an estimation of gestational age in weeks, ie +/– 2 cm from 20-38 weeks" (23). Unfortunately this encourages over emphasis on a single SFH measurement, and the 'point to point' conversion of a single SFH measurement into gestational size in weeks. Even special tape measures, calibrated with the 'cut off levels' of SFH calculated for two week intervals have been used (24). As with ultrasound biometry, a single measurement of SFH is of limited value. Serial measurements showing the trend can improve sensitivity and specificity of SFH measurements in detecting SGA fetuses (25). The technique of SFH measurement is also important. The variable point of the fundus should be first identified, and the measurement taken to the fixed point (the symphysis pubis), with the cm values hidden from the examiner (26). It has been suggested that faulty technique may be the reason for the low sensitivity of SFH measurements in some studies (18,27).

Low birth weight of a baby could be the result of physiological variables such as its sex, and the mother's body mass index, parity and ethnicity. So reference charts of SFH measurements should be 'customised' and adjusted for such variables. Customised SFH charts should be based on longitudinal growth studies and not on cross sectional data. Use of such charts can improve the sensitivity of SFH measurements in detecting SGA fetuses (28). Multiple serial assessments using different methods such as abdominal palpation, SFH measurements, ultrasound biometry and biophysical tests may help the clinician to detect the at-risk FGR fetus early.

In this issue of the *CMJ* Senanayake and colleagues report (p 43-45) that approximately three out of four women attending peripheral as well as tertiary care antenatal clinics (ANC) in Colombo had their SFH measured in cm and documented. It is encouraging to note that more than 70% of SGA fetuses had been detected by SFH measurement in the peripheral ANCs. However, since none of the service providers at the peripheral ANC had plotted the measurements on the SFH chart provided in the pregnancy record card, they probably had not appreciated fully the trend of the SFH measurements. This is probably why only one third of these women whose SFH measurements were found to be less than expected had been referred for further evaluation in a tertiary centre. This study also found that in the tertiary care clinic detection rate of SGA was significantly lower (54%) and later in pregnancy than in the peripheral ANC. This is probably because intern house officers or senior house officers with relatively less clinical experience attend on these women after their 'booking visit' and they have to attend on about 65 patients daily. If these doctors' clinical skills could be improved and the doctor: mother ratio reduced, the detection rate may improve. The availability of ultrasonography would have encouraged them to arrange for further evalution of the women who had low SFH measurements.

As mentioned by Senanayake and colleagues the SFH chart in the pregnancy record card used in peripheral ANCs is unsatisfactory. A reliable customised SFH chart should be developed for Sri Lanka. This will require a properly conducted multicentre longitudinal study of SFH measurements during pregnancy. Once this is developed the importance of plotting SFH measurements on the chart and studying the trend (rather than a single measurement) should be emphasised to all health care personnel who conduct antenatal clinics in the periphery as well as in tertiary care centres. This is likely to improve the detection of SGA fetuses.

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