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BRIEF COMMUNICATION

Introduction of Routine Obstetric Ultrasound in an Urban Health Center: Results and Benefits

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KEY WORDS
obstetric ultrasound, urban health center

Background: Maternal mortality ratio (MMR) in India is 200/100,000 live births, many of which are preventable. To reduce MMR, the Government of India has set up basic obstetric ultrasonography facilities in primary health centers. This service was introduced in a nurse-run, low-risk antenatal and delivery service in an urban health center. This report documents the benefit of prenatal ultrasound in an urban health center.

Methods: This is a retrospective observational study carried out in an urban health center of a tertiary medical college and hospital, which provides health services to the economically disadvantaged urban population. The urban health center runs a nurse-led low-risk antenatal and delivery service. All consecutive antenatal ultrasounds from March 2012 to February 2013 were analyzed. Routine obstetric ultrasound was done for all women at their booking visit. Crown-rump length was measured if the first visit was prior to 13 weeks of gestation. If they presented after 13 weeks of gestation, biparietal diameter and femur length were measured to confirm gestational age.

Results: A total of 715 obstetric ultrasounds were performed during the period from 2012 to 2013. Among the 715 ultrasounds, 71.6% were for estimation of gestational age and 15.7% were for amniotic fluid index estimation for fetal surveillance. Among the dating ultrasounds performed, 48.6% were for primigravida women and 51.4% were for multigravida women. Discrepancies were identified in the expected date of confinement by the last menstrual period in 26% of the dating ultrasounds and 4.2% of women were identified to have a missed abortion at booking visit.

Conflicts of interest: All contributing authors declare no conflicts of interest.

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Conclusion: Maternal morbidity and mortality can be reduced by early detection of missed abortion, placenta previa, twin pregnancy, and molar pregnancy by routine obstetric ultrasound at booking visit. Routine obstetric ultrasound at the first and second trimesters had obvious benefits in confirming the expected date of delivery in a community where remembering the last menstrual period was not a priority. Introduction of this procedure helped in appropriate management of post-term pregnancies.

Introduction

Maternal deaths continue to be a serious health issue in India. The maternal mortality ratio (MMR) in India is 200/100,000 live births in 2010 [1]. This accounts for a quarter of all global maternal deaths. Many of these deaths are due to preventable causes such as hemorrhage and sepsis. In 2005, the Government of India undertook steps such as promotion of institutional deliveries and capacity building of health care providers in basic and comprehensive obstetric care under the National Rural Health Mission (NRHM) to reduce MMR in the country [2].

One of the initiatives for capacity building under the NRHM in the state of Tamil Nadu in India is the provision of basic obstetric ultrasound in primary health centers [3]. Health care workers were provided basic training in obstetric ultrasound mainly for dating of pregnancy, early diagnosis of twins, ectopic pregnancy, missed abortions, and placenta previa. This would promote appropriate early management and referral. Many countries have developed guidelines for obstetric ultrasound as part of antenatal care. For example, in the United States, one of the indications for ultrasound in the first trimester is a presence of discordance in the last menstrual period or to confirm viability [4].

The Federation of Obstetrics and Gynecology Society of India recommends that the antenatal woman should be offered early ultrasound for gestational age assessment, if the facility is available. The measures used for gestational age assessment are crown-rump length if performed at 10—13 weeks and biparietal diameter or head circumference at or beyond 14 weeks. The antenatal woman should be offered ultrasound screening for structural anomalies at 20 weeks [5]. There is evidence from a Cochrane review done in 2010 that ultrasound-based determination of expected date of delivery reduces intervention for post-term pregnancy [6]. Further, a randomized trial has demonstrated that first trimester ultrasound in a low-risk population was more effective than second trimester ultrasound examination in decreasing interventions for post-term pregnancy [7]. The introduction of obstetric ultrasound in our urban health center has so far shown beneficial outcomes. This retrospective study documents the benefit of prenatal ultrasound in an urban health center.

Objective

The objective is to describe the use of routine obstetric ultrasound by generalist physicians in an urban health center where prenatal, intranatal, and postnatal care is provided by nurse midwives.

Methodology

The study setting is an urban health center of a tertiary care medical college and hospital, which provides primary- and secondary-level care to an economically disadvantaged urban population. It is managed by physicians trained in the discipline of family medicine and community medicine. In 2005, the nurse-run antenatal care services and labor room facilities were started as a response to the request from the local population. Nurse midwives provide maternal health care under the supervision of doctors. The nurse midwives provide antenatal care and perform normal deliveries based on written protocols. Nurse midwives were trained in using the protocols. There are definite guidelines for referral or discussion with a physician.

This effort was evaluated in 2011 and found that there are more patients who needed referrals for induction of labor for postdates. It was therefore decided to perform dating transabdominal ultrasound on a routine basis for all the pregnant women at their first visit if not already done. All ultrasounds were performed using General Electric Logiq 3PRO (GE Medical Systems, Milwaukee, Wisconsin 53201, USA) machine with a 3.75-MHz convex probe. The crown-rump length of the fetus was measured for pregnant women who presented prior to 13 weeks. After 13 weeks of gestation, the biparietal diameter and femur length were measured. Amniotic fluid index (AFI) was considered to be normal if it measured $>$ 7 cm. Data were collected retrospectively from the ultrasound register. The gestational age was changed to days for the purpose of statistical calculation and changed to weeks + days for the presentation of data in Table 2. The information analyzed was for all consecutive antenatal ultrasounds from March 2012 to February 2013. Statistical analysis was carried out using SPSS (SPSS Inc., Chicago, IL, USA). The Institutional Review Board has approved the study.

Results

There were 2310 antenatal visits to the urban health center during the period from 2012 to 2013. A total of 715 obstetric ultrasounds were performed during this period.

Obstetric ultrasound done for estimation of gestational age was the most common reason for scanning in our center