Effectiveness of Early Pregnancy Ultrasound in diagnosing Fetal abnormalities in High Risk Women

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Abstract

Objective: To assess the efficacy of 11-14 weeks ultrasound in the diagnosis of fetal abnormalities in high risk women.

Methods: Prospective study conducted at a Teaching hospital in Karachi, Pakistan. One hundred ultrasound (mini-anomaly) scans were performed on 97 high-risk women, between 11-14 weeks of gestation.

Results: The most common indication for the ultrasound scan in the study, was previous history of structural or chromosomal abnormalities (40%) followed by advanced maternal age (22%). Out of 100 ultrasounds performed, two were found to have structural abnormalities at the time of mini-anomaly scan performed at 11-14 weeks. None of the ultrasound scans found to be normal at 11-14 weeks showed an abnormality on the subsequent scans.

Conclusion: Ultrasound scan performed between 11-14 weeks of pregnancy is effective in diagnosing major fetal abnormalities in the high-risk population. It can complement the anomaly scan performed in the second trimester, as some of the abnormalities become evident later in pregnancy (JPMA 54:542;2004).

Introduction

Second trimester ultrasound scan has become an essential part of antenatal care. In cases where a major structural defect is identified, termination of pregnancy is offered.1,2 The morbidity and mortality of this procedure increases with advancing gestation. Therefore early detection of such abnormalities will result in the reduction of such complications.

The benefits of early pregnancy ultrasound have been described by many workers.3-5 Timor Tritsch et al.3 suggested that transvaginal ultrasound done as early as 9-12 weeks, is helpful in the diagnosis of structural abnormalities. As the good quality equipment is becoming available it is possible to perform similar examination by transabdominal route. The role of first trimester ultrasound has been evaluated for the low risk population. 6,7

We embarked on this study to evaluate the role 11-14 weeks ultrasound in the detection of fetal abnormalities in the high-risk population. This study is part of a bigger project on first trimester screening.

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Material and Methods

This is a prospective study conducted in the department of Obstetrics and Gynaecology, at the Aga Khan University Hospital, Karachi, Pakistan. Karachi is the largest city of Pakistan, with an estimated population of 10-12 million belonging to different ethnicity and socio-economic background. The Aga Khan University Hospital is a tertiary care teaching hospital in the private sector equipped with the latest diagnostic and therapeutic facilities and a well equipped neonatal intensive care unit. About 3000 deliveries take place every year. The services of Prenatal diagnosis has only become available in the last two years. In the department of Obstetrics and Gynaecology two antenatal ultrasounds in pregnancy are performed, one at 11-14 weeks and the other between 18-22 weeks. A third trimester ultrasound is requested when indicated.

We performed about 100 ultrasounds on 97 high risk pregnant women in early pregnancy between January 2001- September 2002. The study subjects were seen in the antenatal clinics, counselled and referred for ultrasound by their respective consultants. A single operator performed all the ultrasounds after obtaining a verbal consent, on a Toshiba Nemio machine, using 3.75 MHz probe. Most of the ultrasounds were performed by transabdominal route. A transvaginal scan was performed in cases where the quality of ultrasound was unacceptable.

For maintaining the quality of the scan, the outcome of each pregnancy was monitored. The variables noted were weight of the baby, apgar scores and

any additional abnormality at the time of birth.
All the above-mentioned variables along with the ultrasound details and demographic variables including gestational age were entered in a database file and analysed by SPSS version 10.

Results

In a two-year period 100 ultrasound scans were performed on 97 high risk pregnant women at a mean gestation of 12.4 days. There was one set of twins and of triplets each in this study. The mean maternal age was 30.98 years (range 18-42 years). The study subjects were referred because of their risk factors (Table 1).

Table 1. Details of anatomical survey at the time of scan.

Head and brain
Heart, four chamber view and its position
Stomach bubble and its position
Umbilical cord insertion and anterior abdominal wall
Extremities including the position of hands and feet and number of digits
spine
bladder and kidneys

The indications of the scans are autined in Table2.

Table 2. Indications of the scans.

Indication	No.
Advanced maternal age	22
Previous history of Down's syndrome	7
Family history of chromosomal abnomalities	3
Previous history of congential abnormality	29
Previous pregnancy complicated by miscarriage	
Intrauterine death or neonatal death	18
Previous child with cerebral Palsy	4
History of bleeding in the current pregnancy	2
Multiple Pregnancy	5
Anmpr,a;otu detected on scan in the present pregnancy	1
Pregnancy complication like Diabetes	2
Previous history of Thalasemia/ Cystic fibrosis	5
Discrepancy in dates	2
Total	100

Discussion

Since we have interviewed a limited number of patients and without using systematic randomization for patient selection, generalization of the study results cannot be recommended. Also, we interviewed patients visiting a teaching hospital and this again introduces a bias in the study. But despite these weaknesses in the design and conduct of the study, we have documented the perceptions of patients visiting Specialist Physicians, with regard to Family Physicians and their role.

Fifty six (56%) respondents said they would first consult a Family Physician if they had chest pain, but forty four (44%) would consult Specialist Physicians. This implies that a significant proportion of people do not deem Family Physicians as trustworthy or experienced. Studies also show that patients who do not trust Family Physicians are more likely to report that practitioners do not provide adequate medical service. It is the trusting relationship between a physician and patient that plays a major role in determining patient satisfaction.10

This leads to wastage of limited resources since a majority of cases of chest pain are not due to heart disease and can be handled well by Family Physician. It is also documented that a failure of health delivery system, whereby a patient directly goes to a Specialist without seeing a family physician first, leads to tremendous patient suffering as well.11

Sixty two (62%) respondents believed that the health care delivery system cannot exist without Family Physicians, while eighty (80%) respondents believed that it cannot function without Specialist Physicians. This again underscores the idea that patients place greater emphasis on Specialist Physicians. Another plausible reason is that Family Practice is not a developing specialty in Pakistan, unlike in the developed countries such as United States. Research needs to be conducted to study the status of Family Practice in Pakistan. Unless Family Practice is not developed as it should be, the health care delivery system will not function to its full potential. Differences in approach towards a clinical problem has been reported between Family Physicians and other Specialists. These differences are eluded to by respondents in our study. What is important is the realization of the differences by all categories of medical practitioners and working together for the betterment of patients.12,13

Family Physicians are well mannered, conduct proper physical examinations and provide good treatment according to 38 (16.7%), 25 (11.0%) and 23 (10.1%) respondents respectively. This shows that patient's awareness about qualities of family physicians but unfortunately the number of respondents was small. This again highlights the need to have awareness programs for the public, informing them about the characteristics of family physicians.

Our finding is that a significant number of patients visiting Specialist Physicians are not aware of the role Family Physicians play in the health care delivery system. This is in keeping with earlier findings concerning the low "health literacy," amongst the general population. Limited health literacy increases the disparity in health care access among exceptionally vulnerable populations (such as racial/ethnic minorities and the elderly); in it can

also be an enormous cost burden on the health care delivery system.14,15 To increase health literacy, we need to promote awareness amongst the general population concerning Family Physicians. Further research needs to be conducted to see what methods need to be employed for success of the awareness programs.

The health care costs are reduced by specialists in family medicine when compared to non-specialists. It also appears that costs are lower in non-urban practices. These arguments should affect decision makers in the health system in encouraging specialization in family medicine and its promotion.16

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