FREQUENCY OF PLACENTA ACCRETA ON DOPPLER STUDIES IN PATIENTS WITH PREVIOUS CAESARIAN SECTION

Shakil Sarwar, Afshan Fayyaz, Tiamoor Hussin Babar, Muhmaad Saeed, Hussain Rashid, Naveed Ashraf

Combined Military Hospital, Quetta

ABSTRACT

Objective: To determine frequency of placenta accreta in patients with previous Caesarian section on Doppler ultrasound examination.

Study Design: A Descriptive study.

Place and Duration: The study was conducted in Radiology Department CMH/MH Rawalpindi which is a tertiary care hospital from April 2006 to February 2007.

Patients and Methods: All patients who were pregnant and had previous LSCS were included in our study. The patients were included on the basis of Non-probability convenience sampling. Patients who had all previous normal deliveries were not included in our study. The method adopted on Doppler ultrasound studies placenta accreta in patients with previous caesarian section was confirmed in the first trimester if sac was low lying and attached to anterior wall of uterus with little or no myometrium between sac and bladder. In the second and third trimester visualization of multiple irregular vascular spaces/sinuses within placenta and visualized vascular bundles leaving the placenta and reaching lower part of bladder was diagnostic of accreta.

Result: We found the frequency of placenta accreta in patients with previous caesarian deliveries to be 3% (3/100) in CMH/MH Rawalpindi which is almost consistent with other studies performed in Pakistan and abroad. Out of 100 selected patients 3 were given suspicion of accreta on Doppler studies and confirmed to have accreta by our obstetrician and hysterectomy was done.

Conclusion: Placenta accreta is a life threatening condition with increase risk to mother morbidity and mortality. Doppler ultrasound is a reliable radiological technique to diagnose placenta accreta.

Keywords: Placenta accreta, Caesarian section, Doppler studies, Frequency.

INTRODUCTION

The term 'Placenta accreta' is defined as placenta with abnormal firm adherence to the uterine wall with either partial or complete invasion into the myometrium[1]. The term 'Placenta accreta includes' increta and percreta since these three entities are usually indistinguishable by imaging[2]. However according to the degree of myometrial invasion the condition is subdivided into:

Placenta Accreta Vera: Villi are simply attached to myometrium

Placenta Increta: Villi deeply invade myometrium

Placenta Percreta: Villi penetrate entire thickness of uterine wall.

The incidence of placenta accreta is rising steadily as the frequency of caesarian section increases, & maternal age at delivery increases[3]. There is a need for reliable antenatal diagnosis since placenta accreta encountered unexpectedly can lead to catastrophic blood loss, multiple complications such as Adult Respiratory Distress Syndrome, Sheehan's syndrome, renal failure and even death. Indications for emergency peripartum hysterectomy show that abnormal placentation is increasing in frequency[4]. Doppler Ultrasound examination is a fairly accurate tool for diagnosis of placenta accreta with the presence of multiple irregular vascular spaces within the placenta (placental lacunae) being the diagnostic sign with the highest positive predictive value for placenta accrete[2].

There has been an increase in number of Caesarian deliveries in CMH/MH Rawalpindi in the recent past, and thus the risk of placenta accreta has increased. It is not possible to carry out MRI of every patient suspected to have accreta as it is an expensive diagnostic tool.

Correspondence: Maj Shakeel Sarwar, Radiologist, Combined Military Hospital, Quetta
Email: sarwar_shakil@yahoo,com
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Doppler ultrasonography provides an economical and easily accessible diagnostic tool for the concerned obstretician and avoids the dreadful blood loss and risk to mother's life by good planning and surgical approach, and as such it was planned to see frequency of placenta accreta on Doppler studies in patients with previous C-Section.

PATIENTS AND METHOD

The study was carried out on 100 indoor and outdoor patients in CMH/MH Rawalpindi from April 2006 to Feb 2007. Patient who were having gestational amenorrhea and previous Caesarian section, underwent Doppler ultrasound examination of the placenta for possible findings of placenta accreta. Most of the patients scanned were in their second and third trimesters of pregnancy. All patients who presented in the Radiology department of MH/CMH Rawalpindi were included provided they fulfilled the following criteria:-

1 Patients who had undergone a previous caesarian delivery.

2 Any trimester of pregnancy.

3 Willing and cooperative patients.

Patients who had undergone all previous normal deliveries were not included.

Patients who had undergone previous caesarian section were enrolled in the study after taking informed consent and relevant history. Toshiba Aplio Doppler ultrasound machine was used.

Computer package SPSS version 11 used for computation and analysis of data. Frequencies and percentages were computed for qualitative variables like findings on Doppler studies and Mean and Standard deviation were calculated for quantitative variables like age of the patient, number of previous C-Sections.

RESULTS

One hundred patients having gestational amenorrhea and history of previous caesarian section underwent Doppler ultrasound examination. Out of these 100 patients 3 (3%) were diagnosed to have placenta accreta which was confirmed by our gynecological colleagues and hysterectomy was done (Fig.1). Age of the patients diagnosed to have placenta accreta was 35, 33 and 36 weeks with a mean age of 34.66 (SD 1.25). Out of 11 patients who had more than two caesarian sections 3 (27.27%) were diagnosed to have placenta accerta. Out of 7 patients hving placenta previa 3 (43%) had accrete (Fig. 2).

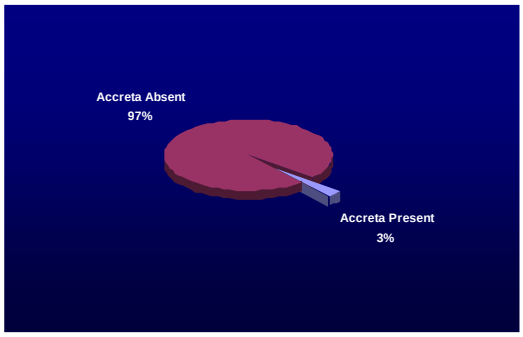


Fig-1: Frequency of placenta accreta in our setup in previous caesarian section patients (N = 100)

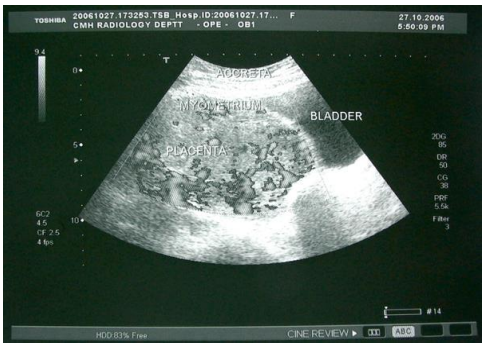


Fig-2: A case of placenta accreta in third trimester

DISCUSSION

The incidence of all forms of placental adhesion (placenta accreta, increta, and percreta) has been rising for the past two decades, likely as the result of increasing caesarean section rates. When the decidua basalis is partially or completely absent due to previous LSCS, these lead to myometrial invasion by the villi, at the site where the decidua basalis is absent[5].

Prior cesarean delivery is associated with a sonographically thinner lower uterine segment when compared with those with prior vaginal delivery. Prenatal sonographic examination is potentially capable of diagnosing a uterine defect and determining the degree of lower uterine segment thinning in patients with previous caesarean delivery[6]. Because of the

associated high risk of maternal exsanguination, two-dimensional imaging, colour-flow doppler, and power doppler is an important and reliable tool in diagnosing accrete[7]. Colour Doppler and power Doppler examinations increase the diagnostic sensitivity of sonography in cases of abnormal placental implantation. On colour doppler Lerner et al[8] found that turbulent blood flow extending from the placenta into surrounding tissues was very sensitive and correctly identified all patients with accreta. Levine et al[9] found that both sonography and MR imaging can be used to diagnose or characterize abnormal placental adhesion. MR imaging is most beneficial in posterior placenta because this anatomic area is sometimes difficult to evaluate with US. They also found that. In patients with a history of uterine scars, vaginal US with power Doppler US performed well in the evaluation of lower-uterine-segment placenta accreta. Chou et al[10] used Doppler in the third trimester and believed it was reliable. A strong association between the lacunar flow pattern and the abnormally adherent placentation was confirmed by colour Doppler sonographic findings. Comstock et al[2] believed the presence of multiple linear irregular vascular spaces within the placenta was the diagnostic sign for accreta and believed that use of colour enhances the appearance of these vascular spaces. The lacunae are irregular in shape and often more linear than rounded or smooth bordered. They do not have the highly echogenic border as the standard venous lakes have. Finberg and Williams[11] found that the likelihood of placenta accreta increased with the number of lacunae, the more prevalent the vascular spaces the greater likelihood of placenta accrete and also added the interruption of bladder serosa line interface an additional criteria for accreta. Durand–reville M et al[12] found that extension of high-vascularized placenta to the myometrium, abnormal placental-subplacental complex and vascular flow through the myometrium are suggestive of diagnosis. Chen YJ et al[13] used colour doppler for the first time in the first trimester and diagnosed a case of placenta accreta at 9 weeks gestation. Fisher SJ et al[14] also used colour doppler to diagnose accreta in first trimester. Twickler et al[15] suggested that intraplacental lucencies/lacunae predict most cases of accreta and also that the lacunae need not be near the area of invasion and concluded by saying that Colour flow mapping predicted myometrial invasion when the smallest myometrial thickness was <1mm and large intraplacental lakes were demonstrated . Lerner et al[8] found that turbulent blood flow extending from the placenta into surrounding tissues was very sensitive and correctly identified all patients with accreta.

Our study was conducted in one of the leading Armed forces hospital where there is maximum influx of patients and all difficult cases are referred. We found that out of our 100 randomly selected patients falling in the inclusion criteria, having previous caesarian section 3 proved positive for accreta.

All the three patients were above 30 and had 3 previous caesarian sections. Miler et al[16] reported that increasing age increases increta, we found this true in our study. Out of total of 23 patients between age of 31 to 35 two had accreta. Three patients with age between 36-40, 1 had accreta.

Clarke et al[17] reported the incidence of accreta to be 35 to 47% in patients with two or more caesarian section increasing to 50 to 67% in patients having four or more previous caesarian sections.

We found that all patients with accreta also had placenta previa. The percentage of accreta in patients with previa and scarred uterus came out to be 43%. Isaacs et al[7] found that the risk of accreta in patients with previa and more than two caesarian sections was almost 50%. Comstock[3] found the risk of accreta in women of 35 or above with two or more C-Sections and previa to be 39%. Doppler ultrasound was found to be a reliable study to diagnose accreta.

CONCLUSION

Placenta accreta is a life threatening condition with increase risk to mother morbidity and mortality. Patients with an antepartum diagnosis of placenta previa, who have had a previous cesarean section, should be considered at risk for developing placenta accreta.

Doppler ultrasound is useful investigation in diagnosing accreta in the second and third trimester. Irregular shape of sinuses with blood flow in them and vessels seen crossing from placenta into myometrium is suggestive of accreta.

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