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Ultrasound in predilection of threatened abortion in early pregnancy: A clinical study

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Abstract

Background: Threatened miscarriage constitutes 15–20% of pregnancies and is one of the commonest gynecological emergencies. This study was conducted to assess utility of ultrasound in detection of threatened abortion.

Materials & Methods: This study was conducted in department of Obstetrics and Gynaecology in year 2015. It included 80 pregnant women with history of threatened abortion. All women were subjected to color Doppler ultrasonography with 2- 5 MHz transducer. Fetal heart rate (FHR), irregular wall of gestational sac, perigestational hemorrhage was assessed.

Results: Group I had 80 patients with threatened abortion, Group II had 22 patients with abortion and group II had 58 patients without abortion. The difference was significant (P – 0.02). Mean maternal age in group I was 25.2±1.2 years and in group II was 24.8±1.4 years. Number of pregnancies was 2.7 in group I and 2.5 in group II. Number of patients with previous abortion was 4 in group I and 48 in group II. Vaginal bleeding was observed in 21 patients in group I and 86 patients in group II. Pelvic pain was seen in 16 patients in group I and 74 patients in group II. Closed cervix was observed in 19 patients in group I and 96 in group II. The difference was non – significant (P > 0.05). Group I had mean fetal heart 79.2 beats/min whereas group II had 125.2 beats/ min. The difference was significant (P < 0.05).

Conclusion: Ultrasonography is useful in detection of pregnancy complication. The use of color Doppler is beneficial in assessing abnormalities. Ultrasound examination has become the "golden standard" in follow-up of the development and complications of early pregnancy. Ultrasonographic findings such as irregular wall of gestational sac, low fetal heart rate (embryonic bradycardia), perigestational hemorrhage etc. are suggestive of threatened abortion. It has helped in managing the patients.

Keywords: pregnancy, threatened abortion, ultrasonography

1. Introduction

Threatened miscarriage constitutes 15–20% of pregnancies and is one of the commonest gynecological emergencies. Previously, the volume of an intrauterine hematoma (IUH) or on the presence of vaginal bleeding was considered but not the location of the hemorrhage. It is likely if the bleeding occurs at the level of the definitive placenta it may result in placental separation and subsequent abortion [1].

Vaginal bleeding before 20 weeks of gestation, accompanied by cramping pain, and sometimes without changes of the cervix are clinical features of threatened abortion.

The sonographic findings using conventional ultrasound have been assessed and are considered to have a prognostic value that interacts with other clinical and maternal factors analyzed [2]. Some parameters obtained using conventional ultrasound considered as prognostic factors are: irregular wall of gestational sac, perigestational hemorrhage, embryonic bradycardia etc. Conversely, an IUH that only detaches the membrane a distance away from the cord insertion can probably reach a significant volume before it affects normal pregnancy development by a direct volume pressure effect. The presence of a hematoma may also be associated with a chronic inflammatory reaction in the decidua, resulting in persistent myometrial activity and expulsion of the pregnancy [3].

With early pregnancy ultrasound amongst health care professionals and women alike has resulted in ever earlier presentation. Knowledge of the typical ultrasound appearances of normal early pregnancy development and a good understanding of its pitfalls is essential for the diagnosis and management of early pregnancy failure. Use of appropriate terminology to describe clinical and ultrasound findings in early pregnancy failure is also essential [4].

The emergence of three-dimensional (3D) ultrasound in obstetrics provided an opportunity to revisit previously abandoned or disregarded obstetric ultrasound parameters, particularly in early pregnancy. 3D assessment of gestational sac volume in the first trimester has been found to be a sensitive indicator of pregnancy outcome, with a smaller than expected gestational sac volume being predictive of failing early pregnancy. The measures obtained by Doppler ultrasonography that may have prognostic value to the evolution of pregnancy include uteroplacental blood flow, also known as trophoblastic flow [5].

This study was conducted to assess utility of ultrasound in detection of threatened abortion in early pregnancy.

2. Materials & Methods

This study was conducted in department of Obstetrics and Gynaecology in year 2015. It included 80 pregnant women with history of threatened abortion.

Patients with multiple pregnancies, molar pregnancy, ectopic pregnancy, amenorrhea with different etiologies of pregnancy, maternal history of systemic diseases and uterine anatomic abnormalities were excluded from the study. Patients were informed regarding the study and written consent was obtained.

General information such as name, age, last menstruation date etc was recorded. A detailed clinical history, physical examination including pelvic examination was done. All

women were subjected to color Doppler ultrasonography with 2- 5 MHz transducer.

Fetal heart rate (FHR) (Figure- 2), irregular wall of gestational sac (Figure- 3), perigestational hemorrhage (Figure- 4) was assessed. It was seen that out of 80 women with threatened abortion, 22 aborted (Group I) and 58 continued pregnancy to full term (Group II).

Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

3. Results

Table 1 shows that group I had 80 patients with threatened abortion, Group II had 22 patients with abortion and group II had 58 patients without abortion. The difference was significant (P – 0.02). Table 2 shows that mean maternal age in group I was 25.2±1.2 years and in group II was 24.8±1.4 years. Number of pregnancies was 2.7 in group I and 2.5 in group II. Number of patients with previous abortion was 4 in group I and 48 in group II. Vaginal bleeding was observed in 21 patients in group I and 86 patients in group II. Pelvic pain was seen in 16 patients in group I and 74 patients in group II. Closed cervix was observed in 19 patients in group I and 96 in group II. The difference was non – significant (P > 0.05). Fig 1 shows that group I had mean fetal heart 79.2 beats/min whereas group II had 125.2 beats/ min. The difference was significant (P < 0.05).

Table 1: Distribution of patients

Group I	Group II	P value
22	58	0.02

Table 2: Variables in both groups

Variable	Group I	Group II	P value
Maternal age	25.2±1.2	24.8±1.4	0.2
Number of pregnancies	2.7	2.5	0.5
Previous abortion	4	48	0.1
Vaginal bleeding	21	86	0.2
Pelvic pain	16	74	0.765
Closed cervix	19	96	0.623

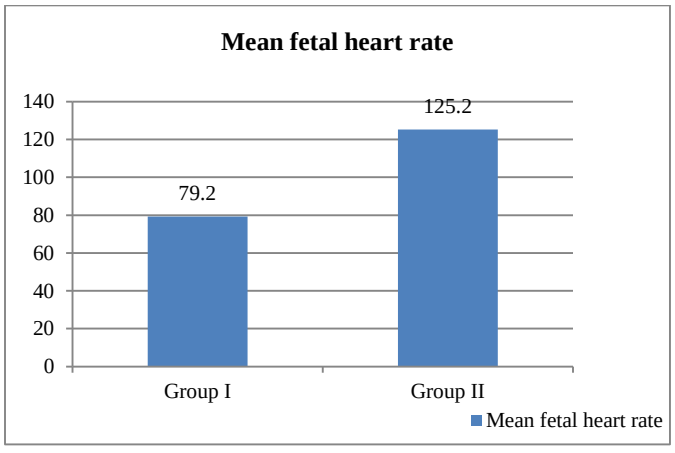

Fig 1: Ultrasound Doppler FHR measurement in both groups

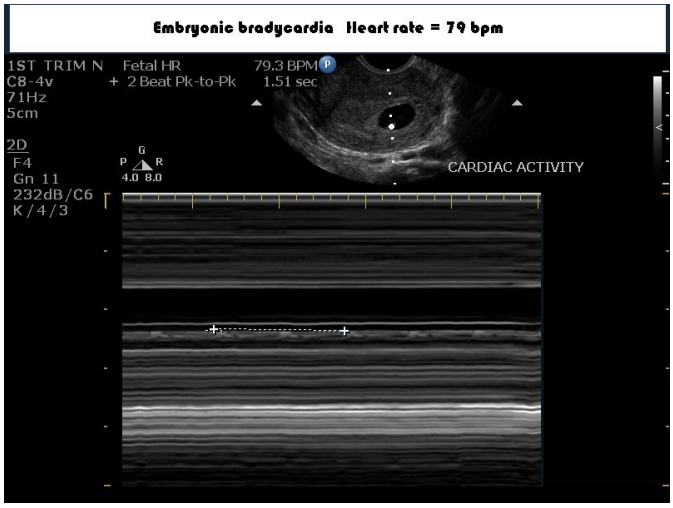

Fig 2: Showing embryonic bradycardia

Fig 3: Showing irregular wall of gestational sac

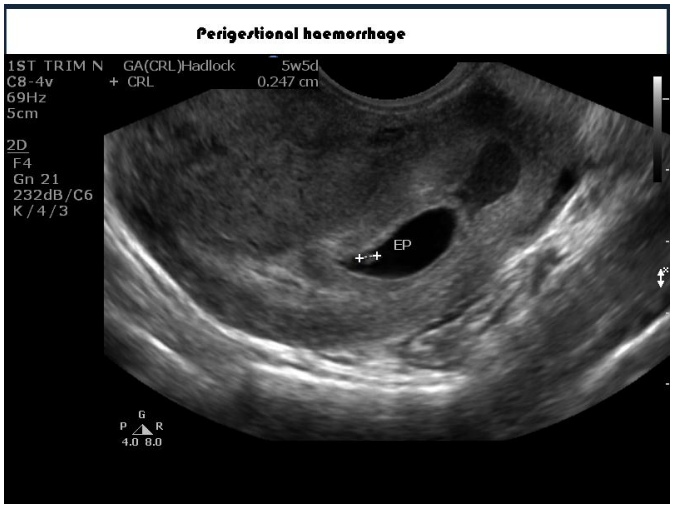

Fig 4: Showing perigestational hemorrhage

4. Discussion

Threatened abortion is a common complication during pregnancy. It has been reported that it affects up to 15-20% of patients, and the risk of ending in abortion is multiplied 2.6 times. In our study, 18.34% ended in threatened abortion. Similar results were seen in study by Goslin RG *et al*., [6].

In our study, mean maternal age in group I was 25.2±1.2 years and in group II was 24.8±1.4 years. This is in accordance to Leible S *et al*. [7] Number of pregnancies was 2.7 in group I and 2.5 in group II. Number of patients with previous abortion was 4 in group I and 48 in group II. This is in accordance to Salim A *et al*., [8].

Vaginal bleeding was observed in 21 patients in group I and 86 patients in group II. Alcazar JL *et al* [9] in their study observed that 53% of patients exhibited vaginal bleeding.

We found that pelvic pain was seen in 16 patients in group I and 74 patients in group II. Closed cervix was observed in 19 patients in group I and 96 in group II. This is in accordance to Hamela- Olkowska A *et al*., [10].

In this study we found that group I had mean fetal heart rate 79.2 beats/min whereas group II had 125.2 beats/ min. Presence of embryonic bradycardia with heart rate < 100 beats/ min is one of the sign of threatened abortion. Similar findings were seen in study by Cooley SM *et al*., [11].

Ultrasound examination has become the "golden standard" in follow-up of the development and complications of early pregnancy. Application of color Doppler ultrasound has enabled functional hemodynamic presentation and evaluation soon after implantation.

5. Conclusion

Ultrasonography is useful in detection of pregnancy complication. The use of color Doppler is beneficial in assessing abnormalities. Ultrasonographic findings such as irregular wall of gestational sac, low fetal heart rate (embryonic bradycardia), perigestational hemorrhage etc. are suggestive of threatened abortion. It has helped in managing the patients.

6. References

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